

638669

SAFETY COMPLIANCE TESTING FOR FMVSS 121

Air Brake Systems

**Vehicle: MY 2007 Thomas Built
Saf-T-Liner C2, 4x2, 48-Passenger School Bus
Thomas Built Buses, Incorporated
Report #: 121V-TRC-06-004
NHTSA #: C70900
TRC Inc. Test #: 20040769/7002**

**Transportation Research Center Inc.
P. O. Box B-67
East Liberty, Ohio 43319-0367**



November 2006

Final Report

U.S. Department of Transportation

National Highway Traffic Safety Administration

Enforcement

Office of Vehicle Safety Compliance

400 Seventh Street, SW

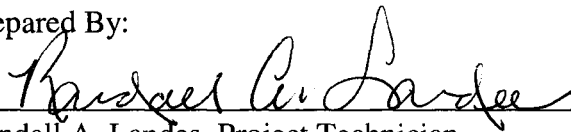
Room 6111 (NVS-220)

Washington, D.C. 20590

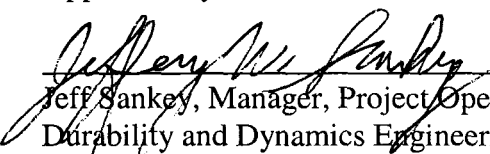
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FINAL REPORT ACCEPTANCE BY OVSC

Accepted By: 

Acceptance Date: 12/14/00

1. REPORT NUMBER: 121V-TRC-06-004		2. GOVERNMENT ACCESSION NO.:		3. RECIPIENTS CATALOG NO.:	
4. TITLE AND SUBTITLE: Final report of FMVSS 121 Compliance Testing of a 2007 Thomas Built Buses, Incorporated, Saf-T-Liner, 4x2, 48-Passenger School Bus, NHTSA No. C70900				5. REPORT DATE: November 17, 2006	
				6. PERFORMING ORGANIZATION CODE: TRC 20040769/7002	
7. AUTHOR(S): Project Manager: RANDALL A. LANDES				8. PERFORMING ORGANIZATION REPORT NO.: 121V-TRC-06-004	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319				10. WORK UNIT NUMBER:	
				11. CONTRACT OR GRANT NO.: DTNH22-05-C-01006	
12. SPONSORING AGENCY NAME AND ADDRESS: U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-220) 400 Seventh Street, SW, Room 6111 Washington, DC 20590				13. TYPE OF REPORT AND PERIOD COVERED: Final test report Tested: 09/27/06 to 11/03/06	
				14. SPONSORING AGENCY CODE: NVS-220	
15. SUPPLEMENTARY NOTES:					
16. ABSTRACT: Compliance tests were conducted on the subject 2007 Thomas Built Buses, Incorporated Saf-T-Liner C2, 4x2, 48-Passenger School Bus, NHTSA No. C70900, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-121V-05 for the determination of FMVSS 121 compliance. Test failures identified were as follows: None.					
17. KEY WORDS: Compliance Testing Safety Engineering FMVSS 121				18. DISTRIBUTION STATEMENT: Copies of this report are available from: NHTSA Technical Information Services (TIS), Rm. 5108 Nassif Building, Room 5108 (NPO-230) 400 Seventh Street, SW, Washington, DC 20590 Telephone No. (202) 366-4949	
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Section 1.0

Purpose of Compliance Test

Purpose

Transportation Research Center Inc. (TRC Inc.) conducted this program for the National Highway Traffic Safety Administration (NHTSA). The purpose of this test was to determine if the subject vehicle, a 2007 Thomas Built Buses, Incorporated (Thomas Built) Saf-T-Liner C2, 4X2, 48-passenger school bus, meets the performance requirements of FMVSS 121, "Air Brake Systems."

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-121V-05. Data was obtained relative to FMVSS 121, "Air Brake Systems." Deviations from the procedure: The only tests performed under section 10.2 "Laboratory Tests" were 10.2 I. "Brake Actuation and Release Timing." The test sequence was performed as follows:

1. Burnish GVWR
2. Brake Actuation and Release Timing GVWR
3. Service Brake Stops GVWR
4. Emergency Brake (Primary Reservoir Failure) Stops GVWR
5. Emergency Brake (Secondary Reservoir Failure) Stops GVWR
6. Emergency Brake (Primary Control Line Failure) Stops GVWR
7. Park Brake – Grade Holding GVWR
8. Stability & Control LLVW
9. Service Brake Stops LLVW
10. Emergency Brake (Primary Reservoir Failure) Stops LLVW
11. Emergency Brake (Secondary Reservoir Failure) Stops LLVW
12. Emergency Brake (Primary Control Line Failure) Stops LLVW
13. Park Brake – Grade Holding LLVW
14. Final Inspection

The vehicle information is summarized in Section 2.0. The test data summary is located in Section 3.0, the test data is located in Section 4.0, and the test summary is located in Section 5.0. Appendix A contains the still photographic prints. The Appendix lists the test data in Report Generator format.

Section 2.0

Vehicle Information

Vehicle Information

The completed test vehicle is a 2007 Thomas Built Buses, Incorporated, High Point, North Carolina, Saf-T-Liner C2, and the incomplete vehicle (chassis) was manufactured by Freightliner Custom Chassis Corporation, Gaffney, South Carolina. The vehicle is a 4x2, 48-passenger (with handicapped accessible lift), school bus with a wheelbase of 238 inches. The Gross Vehicle Weight Rating (GVWR) is 25,500 pounds, and the test vehicle is equipped with a Wabco, 4S/4M anti-lock brake system.

Section 3.0

Test Data Summary

Test Data Summary

Table 1

Summary of Data for Laboratory Test "Application & Release Times"

Average Times in Seconds	Application Max. Allowable – 0.45			Max. – 0.35	Release Max. Allowable – 0.55			Max. – 0.75
	Right Steer #1	Right Drive #2	Right Drive N/A	50 c.i. Resv. N/A	Right Steer #1	Right Drive #2	Right Drive N/A	50 c.i. Resv. N/A
Full System Operating	.306	.284	N/A	N/A	.531	.437	N/A	N/A
ABS Main Power Failed	.306	.282	N/A	N/A	.532	.448	N/A	N/A
ABS Wheel Sensor Failed (Open)	.307	.286	N/A	N/A	.535	.436	N/A	N/A
ABS Wheel Sensor Failed (Short)	.320	.286	N/A	N/A	.531	.440	N/A	N/A

The nominal park brake chamber pressures were 0 psi, 3 seconds after control valve actuated.

Table 2

Data Summary of the Stopping Distances

Distance in Feet (Corrected Dist.)	GVWR		LLVW		Maximum Allowable
	Minimum	Maximum	Minimum	Maximum	(ft.)
1.2 Service Brakes	222.3	242.4	182.2	193.6	GVWR – 280 LLVW – 280
Failed Primary Reservoir	287.6	396.1	204.3	213.6	GVWR – 613 LLVW – 613
Failed Secondary Reservoir	272.9	311.4	225.7	249.3	GVWR – 613 LLVW – 613
Failed Primary Control Line	275.3	309.9	186.7	193.0	GVWR – 613 LLVW – 613

The vehicle passed the Stability and Control tests. Only the LLVW mass condition is required.

Section 4.0

Test Data

**TEST DATA
TABLE 3
VEHICLE INFORMATION SHEET-FMVSS 121**

Vehicle: 2007 Thomas Built, Saf-T-Liner C2, 48-Passenger, School Bus

Veh. Number: C70900

Test No.: 20040769/7002

Test Date(s): 09/27/06 – 11/03/06

Test Facility/Location: TRC/Transportation Research Center Inc., East Liberty, Ohio

Truck/Tractor Year, Make, and Model: 2007 Thomas Built Buses, Incorporated, Saf-T-Liner C2, 48-Passenger (w/wheel chair lift), School Bus Build Date: 07-2006

VIN: 4UZABPDG27CY03914 Body No.: 89382-0662768-281TS

Chassis No.: 68021 (Freightliner – incomplete manufacturer)

GVWR: 25,500 lbs. GAWRs: 8,000 lbs. - Steer; 17,500 lbs. – Drive

Engine Data: Type: (Diesel, gas, other) Diesel
4 Cylinders 293 Cu. In. NA Liter 190 HP

Transmission: 4 Speed Manual X Automatic O.D.

Axle Drive Configuration: 4X2 Center of Gravity (in): No Data

Initial Odometer: 580 mi.

Wheelbase: Truck, (in): 238 Control Trailer, (in): N/A

Retarder(s) Type(s): None Aerodynamic Treatments: Yes No X

BRAKES:

	Type ¹	Size	Make	Lining (Edge Code)
Axles:				
Steer #1	<u>Cam</u>	<u>15 x 4 in.</u>	<u>Meritor</u>	<u>S0R610-FF</u>
Drive #2	<u>Cam</u>	<u>16.5 x 7 in.</u>	<u>Meritor</u>	<u>S0R206-EF</u>
Drive #3	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

¹ Cam, disc, wedge, etc.

....Continued

BRAKE DRUM/ROTOR:

	Type ²	Make	Dust Shields Installed?
Axles:			
Steer #1	<u>Cast Drum</u>	<u>Gunite Trupilot</u>	<u>No</u>
Drive #2	<u>Cast Drum</u>	<u>Gunite Trupilot</u>	<u>No</u>
Drive #3	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

² Cast or composite drum, vented or non-vented rotor, etc.

ACTUATION DETAILS:

AIR CHAMBERS		SLACK ADJUSTERS			
	Make	Type ³	Length or Wedge angle	Mfr.	Cam Rotation ⁴
Axles:					
Steer #1	<u>MGM</u>	<u>16L</u>	<u>5.5 in.</u>	<u>Arvin Meritor</u>	<u>Same</u>
Drive #2	<u>MGM</u>	<u>24</u>	<u>5.5 in.</u>	<u>Arvin Meritor</u>	<u>Same</u>
Drive #3	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

³ Size and diaphragm or piston

⁴ Same or opposite to forward wheel rotation

TIRES

	Pressure (psi)	Size	Make	Model	Static Loaded Radius Measured*	Databook (Website)
Axles:						
Steer #1	<u>100 psi</u>	<u>10R22.5</u>	<u>Goodyear</u>	<u>G149 RSA</u>	<u>N/A</u>	<u>18.9 in.</u>
Drive #2	<u>100 psi</u>	<u>10R22.5</u>	<u>Goodyear</u>	<u>G149 RSA</u>	<u>N/A</u>	<u>18.9 in.</u>
Drive #3	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

*Measured at test GVWR.

REMARKS: There were dual tires at each wheel end on the rear axle, only.

....Continued

ABS:

Mfr: Meritor Wabco Model: FR J1939 E Configuration: 4S/4M

FRONT SUSPENSION:

Type: Solid Axle/Leaf Spring Make: AAC Model: 739913-A018712

INTERMEDIATE SUSPENSION:

Type: N/A Make: N/A Model: N/A

REAR SUSPENSION:

Type: Solid Live Axle/Leaf Make: AAC Model: 742820-A060293

Rear Axle Spread, (in): N/A Overall Width (SAE J693): 96.5 in.

FIFTH WHEEL:

Fifth Wheel Height Relative to Ground (in): N/A Fifth Wheel Position, (in): N/A

AIR SYSTEM:

Compressor Capacity (cfm): No Data

Cut-out (psi): No Data

Cut-in (psi): No Data

Crack Pressure Ratings (psi)⁵:

1st Axle: No Data 2nd Axle: No Data Treadle Valve⁶: No Data

⁵ Relative to rear axle(s) centerline (include sketch if necessary)

⁶ Total crack pressures between treadle valve and brake chambers

Front Axle Limiting: No Data

Air Dryer: Bendix

Air Compounding: No Data

Number of Brakes Controlled: 4S/4M

....Continued

AIR TANK VOLUMES. (cu. in.):

Supply: No Data Primary: No Data Secondary: No Data
Auxiliary: None Isolated From Service? N/A

SPECIAL CONDITIONS:

Special conditions or equipment that might affect brake performance: None.

WEIGHTS (lbs):

	Empty	LLVW	Burnish	GVWR	GAWR
Axle:					
Steer #1	<u>5,550</u>	<u>5,980</u>	<u>8,000</u>	<u>8,000</u>	<u>8,000</u>
Drive #2	<u>10,730</u>	<u>10,820</u>	<u>17,500</u>	<u>17,500</u>	<u>17,500</u>
Drive #3	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Trailer	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Total:	<u>16,280</u>	<u>16,800</u>	<u>25,500</u>	<u>25,500</u>	<u>25,500</u>

REMARKS:

Placard GVWR: 25,500 lbs.

**TEST DATA
TABLE 4
VERIFICATION OF REQUIRED EQUIPMENT**

Vehicle: 2007 Thomas Built, Saf-T-Liner C2 School Bus Veh. No.: C70900

Date: 09-28-06 Driver: R. Heberling Technician: K. Easterday

SERVICE BRAKES

YES

NO

All Wheels Equipped with Brakes

X

All Brakes Equipped with Automatic Brake Adjusters

X

Brake Adjustment Indicators are visible from a location adjacent to or beneath the vehicle

X

ANTILOCK BRAKE SYSTEM

Antilock System Installed

X

Proper axle control

X

Comments: None

Antilock Warning Signal within Drivers Field-of-View
Amber letters, black background, no audible warning

X

SERVICE RESERVOIRS

No. of Reservoirs 2

Automatic Condensate drain valve(s) or supply reservoir

X

Automatic Operation of condensate drain valve

X

Each Reservoir has a Drain Valve which can be manually operated

X

PARKING BRAKES

Parking Brake Control Separate from Service Brake Control

X

Parking Brake Control Accessible from Operator's Seat

X

Parking Brake control is identified in a manner that specifies its operation

X

Parking Brake Control Operates Parking Brakes of Towed Vehicle

 N/A

 Yes

X No

REMARKS: None

LABORATORY TESTS
TABLE 5
BRAKE ACTUATION AND RELEASE TIMES

Vehicle: 2007 Thomas Built, Saf-T-Liner C2 School Bus Veh. Number: C70900

Date: 10-11-06 Driver: R. Heberling Technician: R. Landes

FULL SYSTEM - ABS MAIN POWER ACTIVE								
Run No.	Right Steer #1		Right Drive #2		Right Drive N/A		50 Cu. In. Reservoir	
	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)
1	.304	.530	.281	.434	N/A	N/A	N/A	N/A
2	.311	.548	.286	.434	N/A	N/A	N/A	N/A
3	.304	.515	.286	.441	N/A	N/A	N/A	N/A
Avg.	.306	.531	.284	.437	N/A	N/A	N/A	N/A
FULL SYSTEM - ABS MAIN POWER FAILED								
1	.304	.513	.281	.461	N/A	N/A	N/A	N/A
2	.304	.548	.284	.441	N/A	N/A	N/A	N/A
3	.309	.534	.280	.441	N/A	N/A	N/A	N/A
Avg.	.306	.532	.282	.448	N/A	N/A	N/A	N/A
ABS - WHEEL SENSOR FAILED - OPEN								
1	.304	.537	.236	.408	N/A	N/A	N/A	N/A
2	.311	.535	.286	.441	N/A	N/A	N/A	N/A
3	.305	.534	.286	.458	N/A	N/A	N/A	N/A
Avg.	.307	.535	.286	.436	N/A	N/A	N/A	N/A
ABS - WHEEL SENSOR FAILED - SHORT								
1	.311	.525	.286	.447	N/A	N/A	N/A	N/A
2	.337	.525	.286	.441	N/A	N/A	N/A	N/A
3	.311	.543	.286	.433	N/A	N/A	N/A	N/A
Avg.	.320	.531	.286	.440	N/A	N/A	N/A	N/A

REMARKS: To simulate the "Open" failure and immediately adjacent to the wheel, the right rear drive axle #2 wheel speed sensor lead was disconnected. To simulate the "Shorted" failure and immediately adjacent to the wheel, the right rear drive axle #2 wheel speed sensor connector was disconnected and the two exposed wire ends (prong receptacles) to the ABS ECU were connected with a jumper wire. For the ABS Active tests, the ignition was in the ON/RUN position with the engine not running. For the ABS Main Power Failed tests, the ignition was in the OFF position. All tests were performed with the vehicle attached to "shop" air and regulated to approximately 100 psi.

**ROAD TESTS
TABLE 6
PARK BRAKE CHAMBER ACTUATION PRESSURE**

PARKING BRAKE TEST

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

Vehicle Number: C70900

Test Performed By: R. Landes

Date: 10-11-06

PARK BRAKE CHAMBER ACTUATION PRESSURE

AXLE # 2

RUN NUMBER	PRESSURE IN INTERMEDIATE PARKING CHAMBER AFTER 3 SECONDS (PSI)	
	LEFT	RIGHT
1	0 psi	0 psi
2	0 psi	0 psi
3	0 psi	0 psi
AVERAGE	0 psi	0 psi

If average pressure is less than or equal to 3 psi, use 0 psi

REMARKS: Average time to reach 3 psi – 1.1 sec.

**ROAD TESTS
TABLE 7
BURNISH**

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

Vehicle Number: C70900

8.1 BURNISH TEST WEIGHT STEER AXLES: 8,000 lbs DRIVE AXLES: 17,500 lbs			
Driver No.	Date	Odometer Start	Odometer End
1	10/05/06	608	795
1	10/06/06	795	1,118

	Date	Time	Odometer
Test Start	10/05/06	18:30	795
Test Finish	10/06/06	23:55	1,118

	ADJUSTMENT LEVELS					
	1L	1R	2L	2R	3L	3R
Initial	5/8 in.	5/8 in.	5/8 in.	5/8 in.	N/A	N/A
1st	5/8 in.	5/8 in.	5/8 in.	5/8 in.	N/A	N/A
2nd	5/8 in.	5/8 in.	5/8 in.	5/8 in.	N/A	N/A
3rd	5/8 in.	5/8 in.	1/2 in.	1/2 in.	N/A	N/A
Final	5/8 in.	5/8 in.	1/2 in.	1/2 in.	N/A	N/A

REMARKS: "Freestroke" measurement values were checked and *if* required, adjusted to 1/2 in. to 5/8 in. at the required intervals and at brake temperatures below 200 degrees F. All initial Burnish adjustment clearances were set at 5/8 in. All post-Burnish adjustments set to 1/2 in. freestroke.
Driver #1 – Richard Heberling.

....Continued

Snub #	Initial Speed (mph)	Avg. Cntrl. Press. (psi)	Avg. Decel (ft/s ²)	Initial Brake Temperatures °F											
				1L	1R	2L	2R								
1	39.7	39	9.7	82	86	90	96								
25	39.9	46	10.4	203	251	302	336								
50	40.1	44	9.7	208	251	296	325								
75	40.1	44	9.8	207	251	295	323								
100	40.0	45	10.2	194	249	307	340								
125	41.0	43	9.7	199	235	320	357								
150	40.3	41	9.5	180	230	289	316								
175	40.4	40	9.3	189	231	317	349								
200	39.7	40	10.2	179	218	274	289								
225	40.6	41	9.6	188	226	299	323								
250	40.4	43	10.3	190	235	294	329								
275	39.9	40	9.5	196	238	277	290								
300	40.5	42	9.9	202	252	292	315								
325	40.4	40	9.5	208	253	295	326								
350	40.4	43	9.8	216	247	295	326								
375	40.1	40	10.0	206	249	296	323								
400	40.9	43	9.2	204	259	286	321								
425	40.1	40	9.8	218	259	311	335								
450	39.9	42	10.0	206	255	302	322								
475	40.5	41	9.8	217	252	306	327								
500	40.1	43	10.3	211	254	300	325								

(Table continued on next page)

REMARKS: #1 = steer axle; #2 = rear drive axle.
No issues were noted during the burnish.

....Continued

Snub #	Initial Target Speed mph	Ambient Temp °F	Comments	Driver Initials	Time
1	40	90	Initiate.	RH	18:30
25	40	90		RH	
50	40	89		RH	
75	40	88		RH	
100	40	86		RH	
125	40	84	Check adjustment.	RH	21:55
150	40	82		RH	
175	40	81	End of shift.	RH	23:55
200	40	80		RH	
225	40	79		RH	
250	40	79	Check adjustment.	RH	
275	40	91		RH	
300	40	90		RH	
325	40	90		RH	
350	40	89		RH	
375	40	88	Check adjustment.	RH	
400	40	84		RH	
425	40	83		RH	
450	40	82		RH	
475	40	81		RH	
500	40	80	Check adjustment/end test.	RH	23:55

REMARKS: None.

DATA SHEET 10
SERVICE BRAKE STOPPING TEST
GVWR

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Initial/End Odo.: 1,128 / 1,152

Date: 10/16/06 Driver: K. Easterday Tech./Video: R. Landes

Project/Segment Nos.: 20040769/7002 Time: 14:25

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Manual brake adjustments permitted prior to performing stops.

Brake Stroke Measurements @ 85 psi (in) "Free" Stroke Measurements (in.)

Axle 1 Left/Right 1 1/8 / 1 1/4 Axle 1 Left/Right 1/2 / 1/2

Axle 2 Left/Right 1 1/2 / 1 1/4 Axle 2 Left/Right 1/2 / 1/2

Axle 3 Left/Right N/A / N/A Axle 3 Left/Right N/A / N/A

Dist. Req. (ft.) @ 60: GVW&LLVW Bus: 280; GVW Truck: 310; LLVW Truck & Tractor: 335; GVWR Tractor: 355.

60 MPH SERVICE BRAKE STOPS - GVWR

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	120.6	60.3	234.2	231.6	YES	NO	Video Tape
2	121.1	60.1	243.4	242.4	YES	NO	Video Tape
3	121.7	60.3	225.9	223.7	YES	NO	None
4	121.9	60.0	222.1	222.3	YES	NO	None
5	115.6	59.2	235.7	242.4	YES	NO	None
*6	122.1	19.9	26.6	26.8	YES	NO	Video Tape

Ambient Temp.: 55°F Wind Speed/Dir.: 11 mph, 138°SE

Comments: *Not required – indicant test, only.

DATA SHEET 11
EMERGENCY BRAKE STOPPING TEST
PRIMARY RESERVOIR FAILURE @ GVWR
GVWR

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Initial/End Odo.: 1,161 / 1,181

Date: 10/24/06 Driver: K. Easterday Tech./Video: J. Giessinger

Project/Segment Nos.: 20040769/7002 Time: 14:20

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops **MUST** be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - GVWR (Primary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	56.1	60.7	405.7	396.1	Yes	NO	Video Tape
2	54.8	60.1	340.5	338.9	Yes	NO	None
3	57.3	59.7	284.9	287.6	Yes	NO	None
4	55.4	59.9	311.9	312.8	Yes	NO	None
5	58.2	60.2	314.3	311.9	Yes	NO	None
6*	38.1	20.8	34.5	31.8	Yes	NO	Video Tape

Ambient Temp.: 45 °F Wind Speed/Dir.: 24 mph, 315° NW

Comments: *Not required – indicant test, only.

DATA SHEET 12
EMERGENCY BRAKE STOPPING TEST
SECONDARY RESERVOIR FAILURE @ GVWR
GVWR

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus
 TRC Vehicle No.: C70900 Initial/End Odo.: 1,194 / 1,217
 Date: 10/25/06 Driver: R. Heberling Tech./Video: J. Giessinger
 Project/Segment Nos.: 20040769/7002 Time: 9:50

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - GVWR (Secondary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	112.3	60.4	313.0	309.1	Yes	NO	Video Tape
2	121.7	61.0	321.8	311.4	Yes	NO	Video Tape
3	114.5	57.3	249.3	272.9	Yes	NO	None
4	115.7	58.8	266.4	277.0	Yes	NO	None
5	113.6	60.0	297.2	296.9	Yes	NO	None
6*	122.4	20.7	33.8	31.6	Yes	NO	Video Tape

Ambient Temp.: 42°F Wind Speed/Dir.: 9 mph, 318°NE
 Comments: *Not required – indicant test, only.

**ROAD TESTS
DATA SHEET 15
STABILITY & CONTROL – LLVW**

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

Veh. No.: C70900

Date: 10-26-06 Driver: R. Herberling Observer/Video: J. Geissinger

Manually Controlled Retarder: N/A

Maximum Drive Through Speed 32 mph

75% of Max Drive Through Speed 24 mph

STABILITY & CONTROL-LLVW

Stop No.	*Initial Speed (mph)	Apply Time (sec)	Approx. Dist. Out of Lane (ft)	Number Markers Hit	Comments
1	23.8	0.230	0	0	Video Tape
2	24.7	0.063	0	0	Video Tape
3	24.9	0.111	0	0	Video Tape
4	25.2	0.075	0	0	Video Tape

Ambient Temp.: 42°F

Wind Speed: 10 mph

Direction: 127° SE

REMARKS: The vehicle remained in the lane during all four stops.

DATA SHEET 16
SERVICE BRAKE STOPPING TEST
LLVW

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Initial/End Odo.: 1,267 / 1,281

Date: 10/30/06 Driver: R. Heberling Tech./Video: J. Geissinger

Project/Segment Nos.: 20040769/7002 Time: 8:45

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Manual brake adjustments permitted prior to performing stops.

Brake Stroke Measurements @ 85 psi (in)

"Free" Stroke Measurements (in.)

Axle 1 Left/Right 1 1/4 / 1 1/4

Axle 1 Left/Right 1/2 / 1/2

Axle 2 Left/Right 1 / 1

Axle 2 Left/Right 1/2 / 1/2

Axle 3 Left/Right N/A / N/A

Axle 3 Left/Right N/A / N/A

Dist. Req. (ft.) @ 60: GVW&LLVW Bus: 280; GVW Truck: 310; LLVW Truck & Tractor: 335; GVWR Tractor: 355.

60 MPH SERVICE BRAKE STOPS - LLVW

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	120	60.0	186.8	186.5	Yes	NO	Video Tape
2	121	60.5	193.7	190.7	Yes	NO	Video Tape
3	120	60.0	182.3	182.2	Yes	NO	None
4	119	60.2	194.9	193.6	Yes	NO	None
5	120	59.5	185.9	189.1	Yes	NO	None
6*	120	20.4	25.7	24.8	Yes	NO	Video Tape

Ambient Temp.: 49°F Wind Speed/Dir.: 7 mph, 162°SE

Comments: *Not required – indicant test, only.

DATA SHEET 17
EMERGENCY BRAKE STOPPING TEST
PRIMARY RESERVOIR FAILURE @ LLVW
LLVW

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Initial/End Odo.: 1,281 / 1,299

Date: 10/30/06 Driver: R. Heberling Tech./Video: J. Geissinger

Project/Segment Nos.: 20040769/7002 Time: 9:30

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops **MUST** be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - LLVW (Primary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	60	58.5	196.7	207.1	Yes	NO	Video Tape
2	59	59.5	202.9	206.5	Yes	NO	Video Tape
3	58	58.0	199.4	213.6	Yes	NO	None
4	58	60.0	204.6	204.3	Yes	NO	None
5	53.9	59.2	198.8	204.3	Yes	NO	None
6	50.7	21.6	29.0	24.9	Yes	NO	Video Tape

Ambient Temp.: 56°F Wind Speed/Dir.: 12 mph, 178°S

Comments: *Not required – indicant test, only.

DATA SHEET 18
EMERGENCY BRAKE STOPPING TEST
SECONDARY RESERVOIR FAILURE @ LLVW
LLVW

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus
 TRC Vehicle No.: C70900 Initial/End Odo.: 10,326 / 10,348
 Date: 10/30/06 Driver: R. Heberling Tech./Video: J. Geissinger
 Project/Segment Nos.: 20040769/7002 Time: 10:20

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - LLVW (Secondary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	199	59.9	248.7	249.3	Yes	NO	Video Tape
2	120	59.9	229.8	230.4	Yes	NO	Video Tape
3	120	58.5	227.7	239.3	Yes	NO	None
4	121	58.9	217.6	225.7	Yes	NO	None
5	121	58.8	228.1	237.4	Yes	NO	None
6*	121	20.4	29.9	28.9	Yes	NO	Video Tape

Ambient Temp.: 62°F Wind Speed/Dir.: 12 mph, 155°SE
 Comments: *Not required – indicant test, only.

DATA SHEET 19
EMERGENCY BRAKE STOPPING TEST
PRIMARY CONTROL LINE FAILURE @ LLVW
LLVW

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Initial/End Odo.: 1,317 / 1,331

Date: 10/30/06 Driver: R. Heberling Tech./Video: J. Geissinger

Project/Segment Nos.: 20040769/7002 Time: 12:05

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake any time after opening solenoid.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - LLVW (Primary Control Line)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication	Comments
1	112	58.9	180.7	187.3	Yes	NO	Video Tape
2	113	59.9	188.5	189.2	Yes	NO	Video Tape
3	113	60.4	191.4	189.0	Yes	NO	None
4	114	59.8	185.6	186.7	Yes	NO	None
5	114	59.4	188.9	193.0	Yes	NO	None
6*	114	20.2	29.7	29.0	Yes	NO	Video Tape

Ambient Temp.: 68°F Wind Speed/Dir.: 17 mph, 199°S

Comments: *Not required – indicant test, only.

**ROAD TESTS
DATA SHEET 20
PARK BRAKE TEST
20% GRADE HOLDING - LLVW**

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Initial/End Odo.: 1,332 / 1,332

Date: 10/30/06 Driver: R. Heberling Tech./Video: J. Geissinger

Project/Segment Nos.: 20040769/7002 Time: 12:50

Ambient Temperature: 32° to 100°F.

IBT's: 150° to 200°F.

Parking Brake Chamber(s) Pressure 0 psi

20% GRADE HOLDING - LLVW

<u>GVWR</u> <u>X</u> <u>LLVW</u>	Initial Brake Temperature(s) (°F)	Control Pressure to Hold Vehicle (psi)	Movement to Become Stationary on Grade (inches)	Stationary on Grade For 5 minutes	
				Yes	No
	Hottest Brake				
Up Grade*	170	25	0	X	
Down Grade	153	25	0	X	

Ambient Temp.: 68°F

Wind Speed: 13 mph

Direction: 181° S

REMARKS: The test vehicle remained stationary on the grade facing both upgrade and downgrade for the required five-minute period.

DATA SHEET 21
FINAL INSPECTION

Vehicle: 2007 Thomas Built Saf-T-Liner C2 School Bus

TRC Vehicle No.: C70900 Final Odo.: 1,337

Project/Segment Nos.: 20040769/7002 Time: 11:00

Date: 11/02/06 Driver: R. Heberling Tech.: R. Landes

Brake Stroke Measurements @ 85 PSI (in.) "Free-Stroke" Measurements (in.)

Axle 1 Left/Right 1 / 1

Axle 1 Left/Right 1/2 / 1/2

Axle 2 Left/Right 1 3/8 / 1 1/8

Axle 2 Left/Right 1/8 / 1/4

Axle 3 Left/Right N/A / N/A

Axle 3 Left/Right N/A / N/A

Axle 4 Left/Right N/A / N/A

Axle 4 Left/Right N/A / N/A

SERVICE BRAKES

All Brakes Structurally Intact: ☒ Yes No

All Brakes Function Properly: ☒ Yes No

All Brakes Adjusted Within Manufacturers Recommendation: ☒ Yes No

Overall Condition of Test Vehicle: Excellent – New (at delivery).

Tires replaced: Yes X No

New Brake Linings: Axle #1 X Yes No; Axle #2 X Yes No;

Axle #3 Yes No X N/A

Additional Comments:

Overall condition of the foundation brakes, post-test, would be described as normal in appearance and color. No fractures or separations appeared on the linings. Also, the drum's appearance would be described as normal.

Section 5.0

Instrumentation List

Instrumentation List

Instrumentation	Serial Number (I.D. No.)	Calibration Date	Next Calibration Date
A-DAT DSR-6 Radar Fifth Wheel	140.00182	Daily on a measured mile	N/A
Lock-Up Detection System	TRC Prop.	Calibrated before test	N/A
Treadle Pressure Transducer	PT-897090	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-359018	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-351132	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-169755	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-355434	Calibrated before test using a dead weight	N/A
Mansfield-Green Dead Weight Calibrator	DW-6253	03/23/06	03/23/07
Setra Accelerometer	A-167627	Calibrated before test utilizing known calibrated inclines.	N/A
Davis Weather Sys. 6152	A50609A02	06/11/06	06/11/07
Thermocouples	T52-0B-24K	Calibrated before test	N/A
Toledo Mettler Scales	JXGA- 5318823-5KD	08/28/06	11/06
Safety Gauge, Tire Pressure Gauge (0-160 psi)	AG-003	09/04/06	01/04/07
LINK System	2037	03/28/05	03/28/07
Toshiba PC (used with LINK)	43248	N/A	N/A

APPENDIX A

PHOTOGRAPHS

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Front View @ GVWR

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Right Side View @ GVWR

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



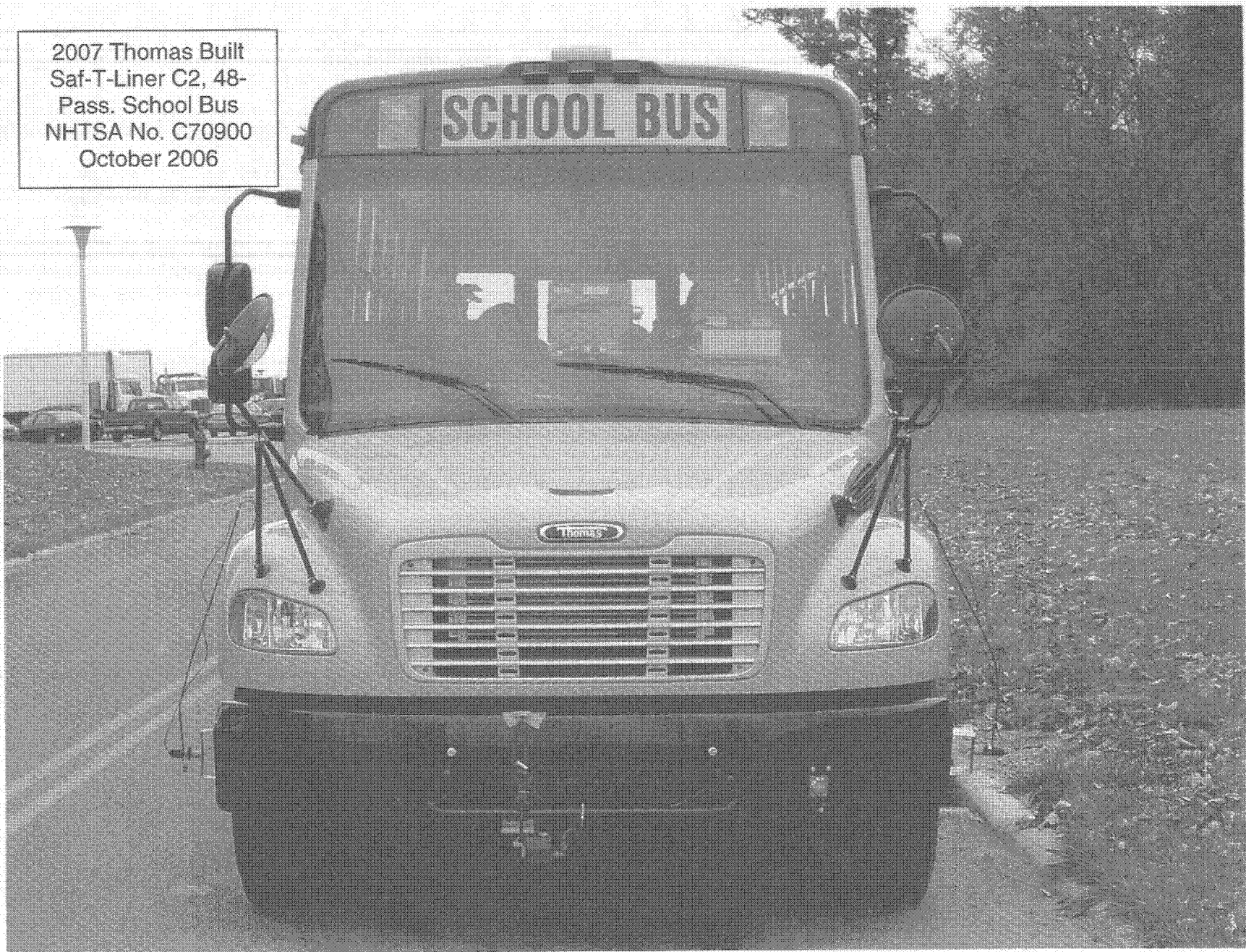
Left Side View @ GVWR

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Rear View @ GVWR

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Front View @ LLVW

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Right Side View @ LLVW

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Left Side View @ LLVW

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Rear View @ LLVW

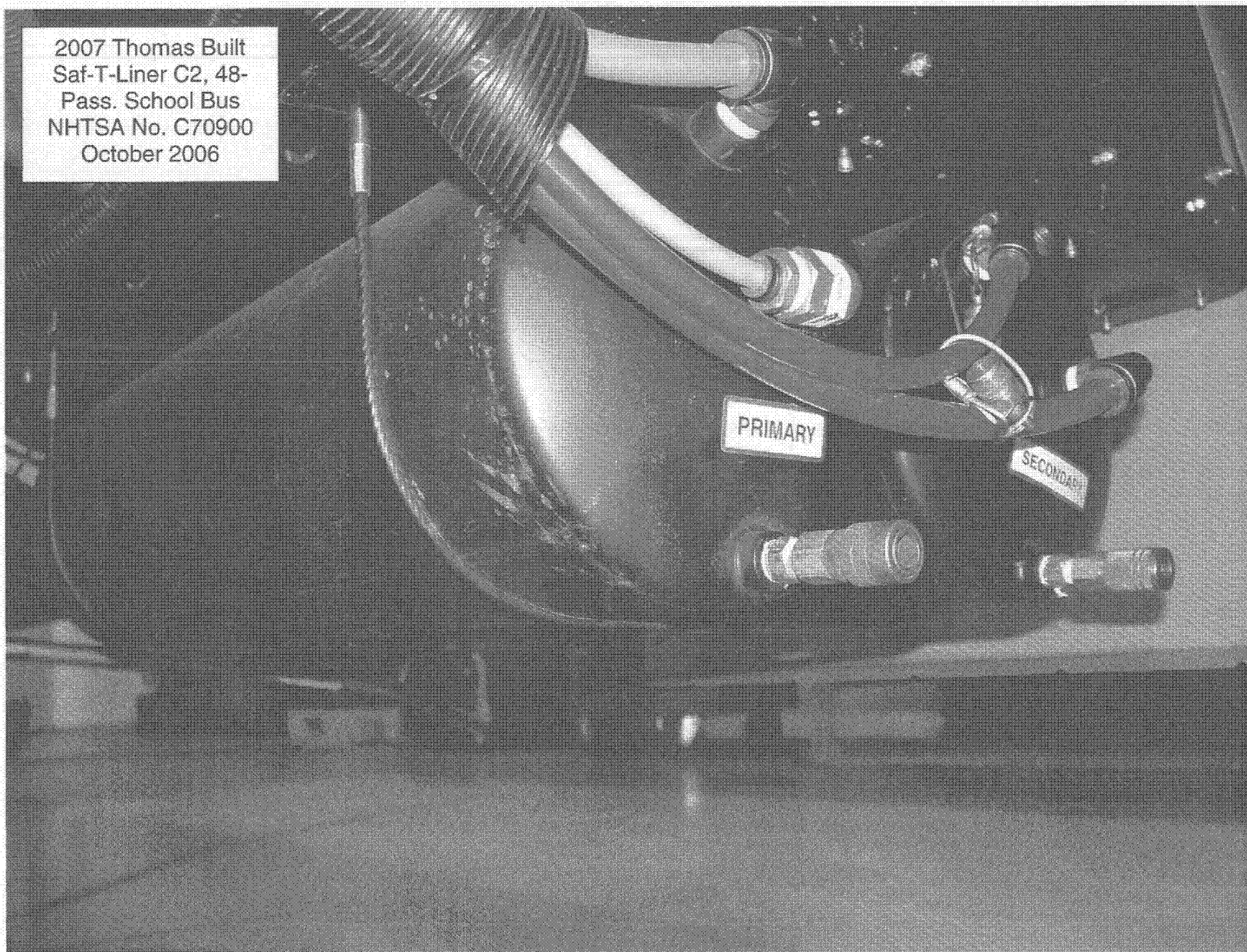
2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



HIGH POINT, NORTH CAROLINA
MFD BY THOMAS BUILT BUSES INC. 07-2006
INC VEH MFD BY: FREIGHTLINER 07-2006
GVWR 11569KG (25500LB)
GAWR FRONT: 03630 KG (8000LB) W/22.5X7.50RIMS, 10R22.5
TIRES 8690KPA (100PSI) COLD, "F" LOAD RATING, SINGLE
GAWR REAR : 07940 KG (17500LB) W/22.5X7.50RIMS, 10R22.5
TIRES 8689KPA (100PSI) COLD, "F" LOAD RATING, DUAL
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
VEHICLE SAFETY STANDARDS IN EFFECT IN: 07/2006
VIN: 4U2ABPDG27CY03914 VEH. TYPE: SCHOOL BUS
BODY ID: 89382-0662768-281TS EQUIP CAP: 048 +DRIVER
CHASSIS ID NO: 68021

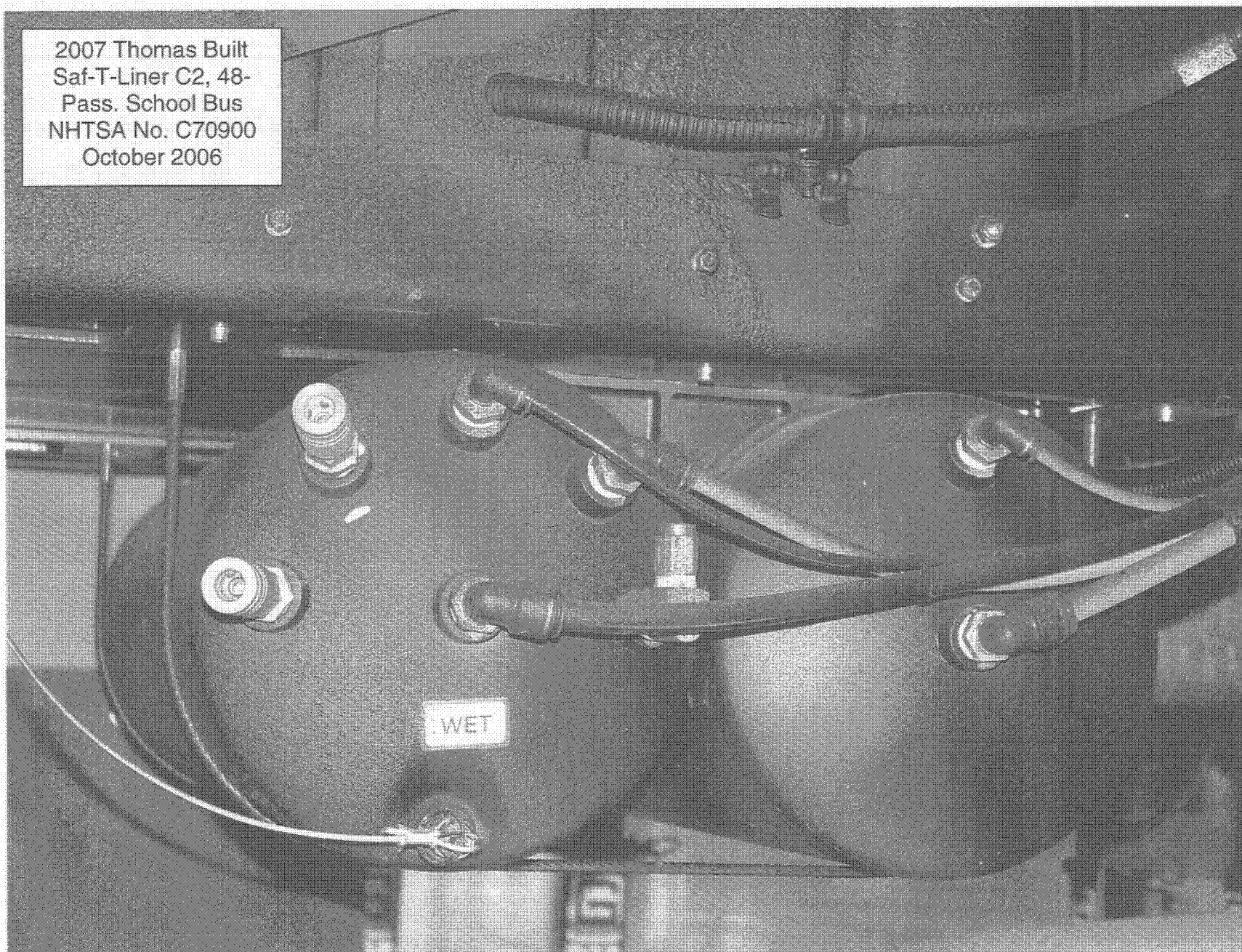
Manufacturer's Placard

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



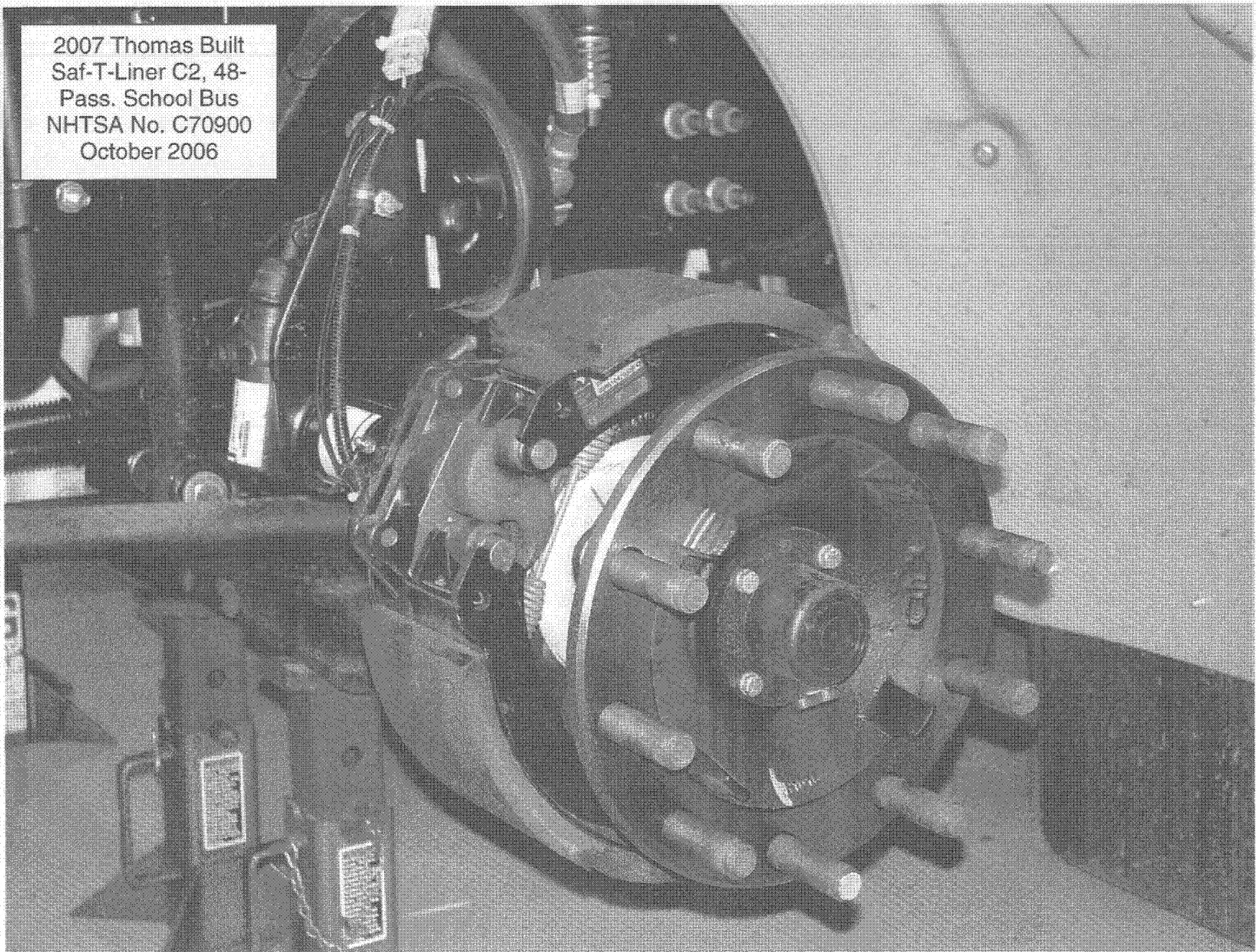
Reservoirs (Primary & Secondary)

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



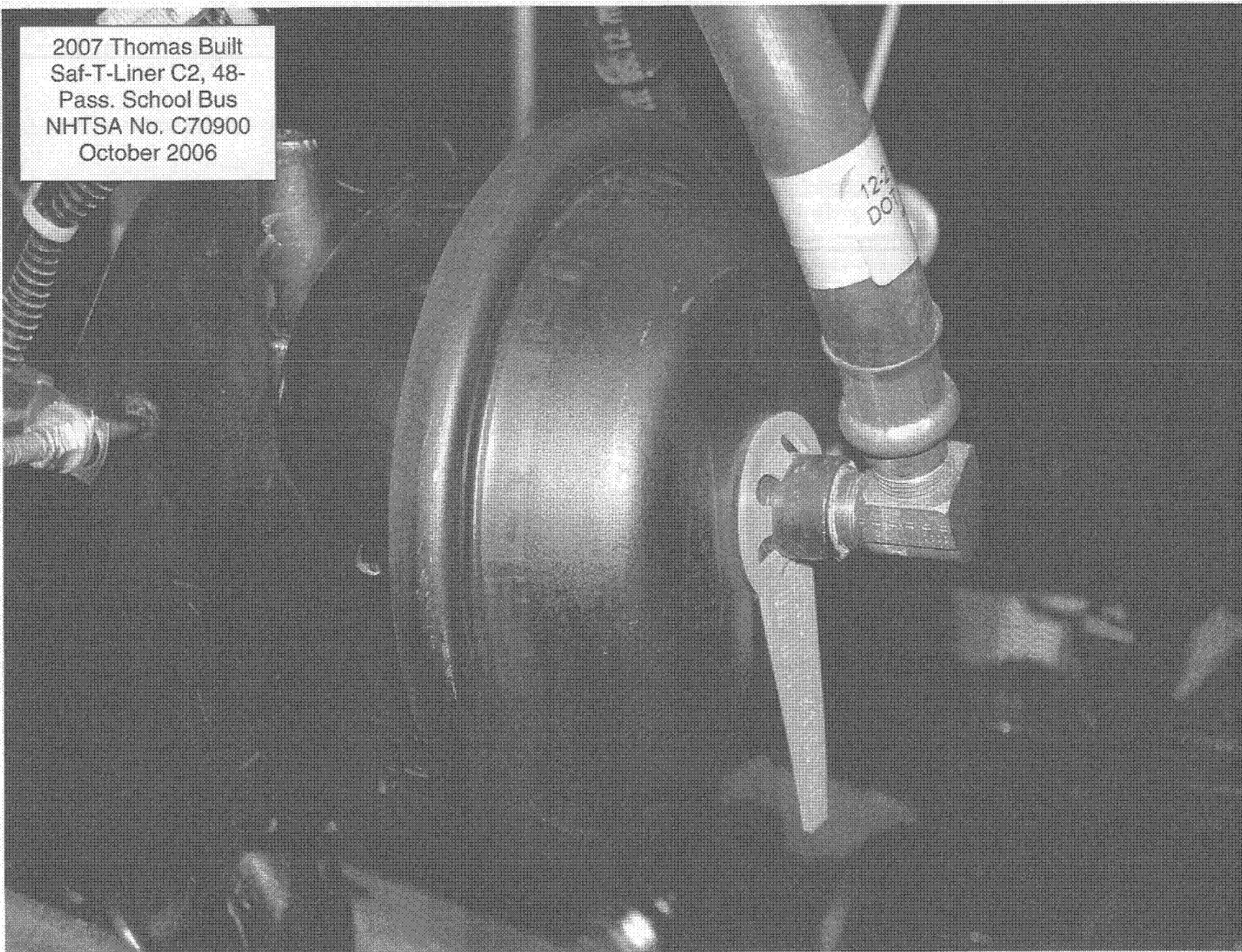
Reservoirs (Wet section)

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



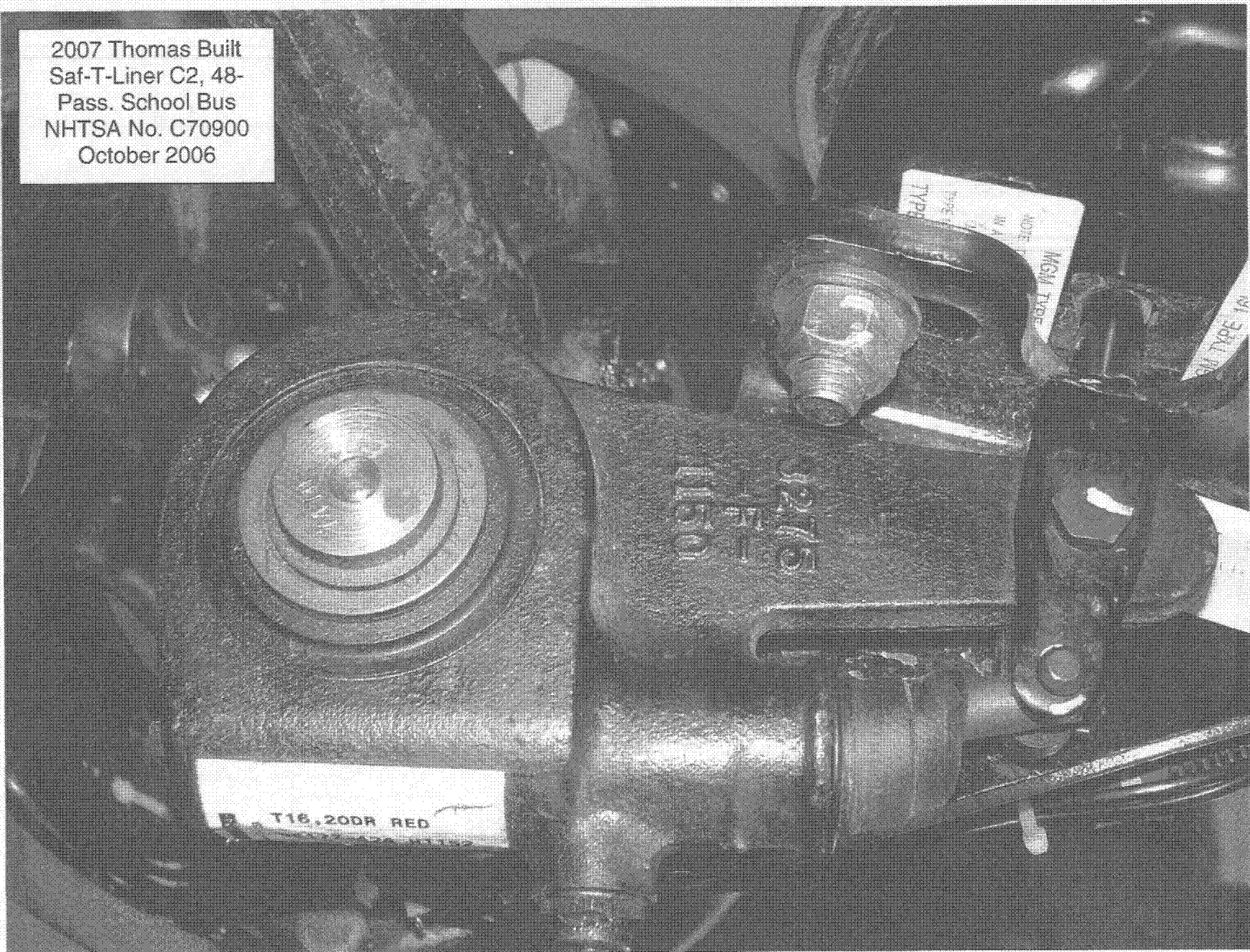
Left Steer Brake Assembly

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



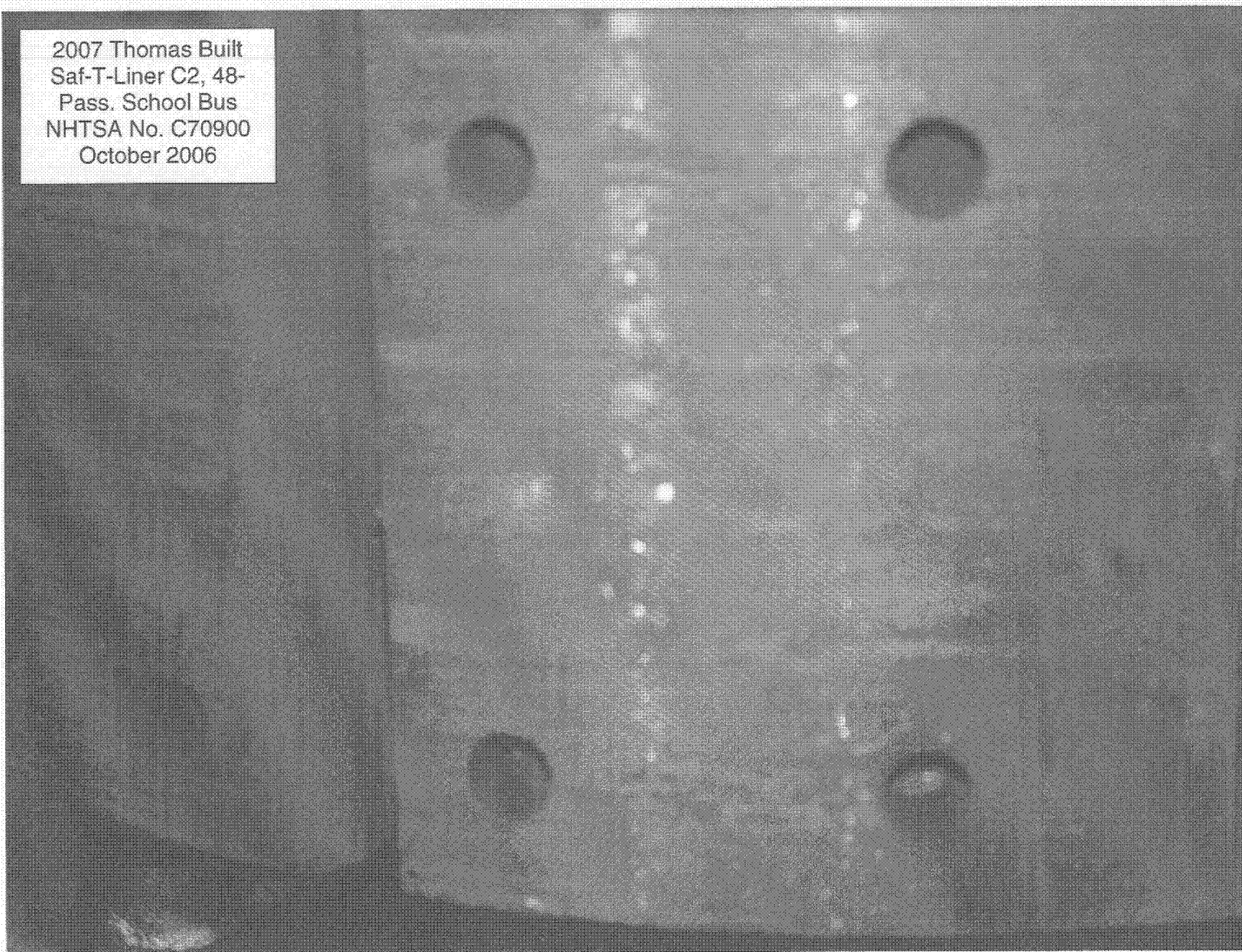
Left Steer Brake Chamber

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



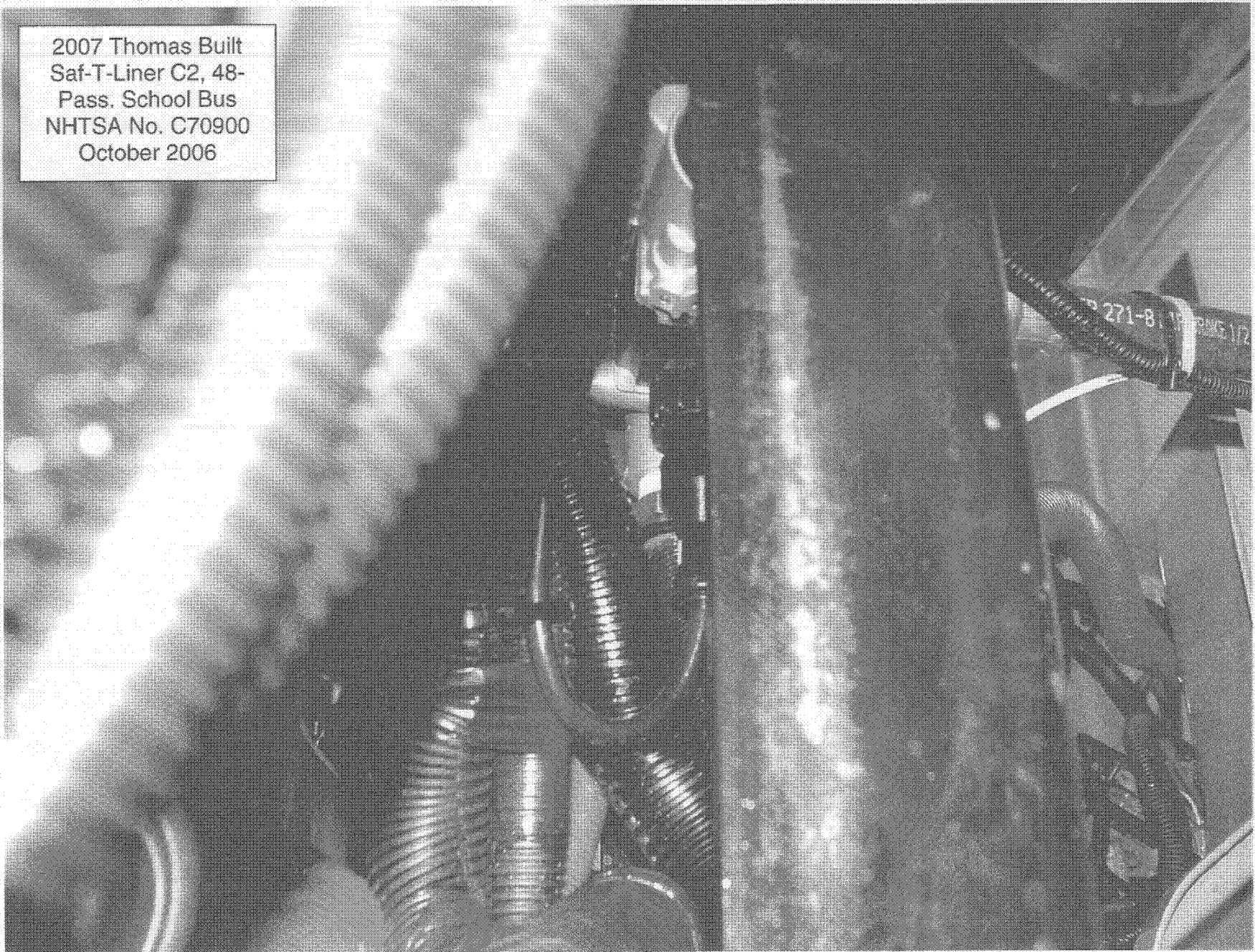
Left Steer Automatic Slack Adjuster

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



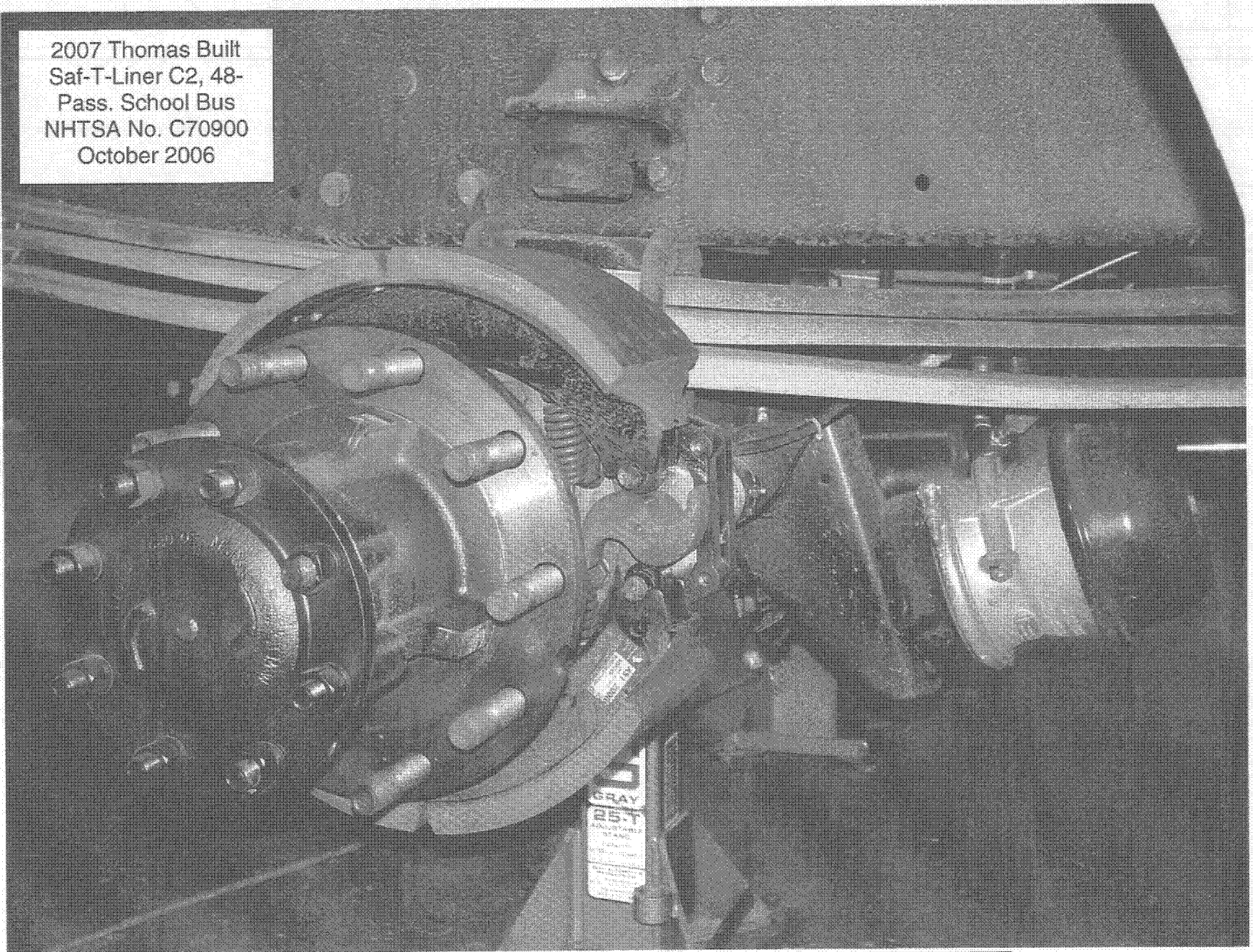
Left Steer Thermocouple Installation

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



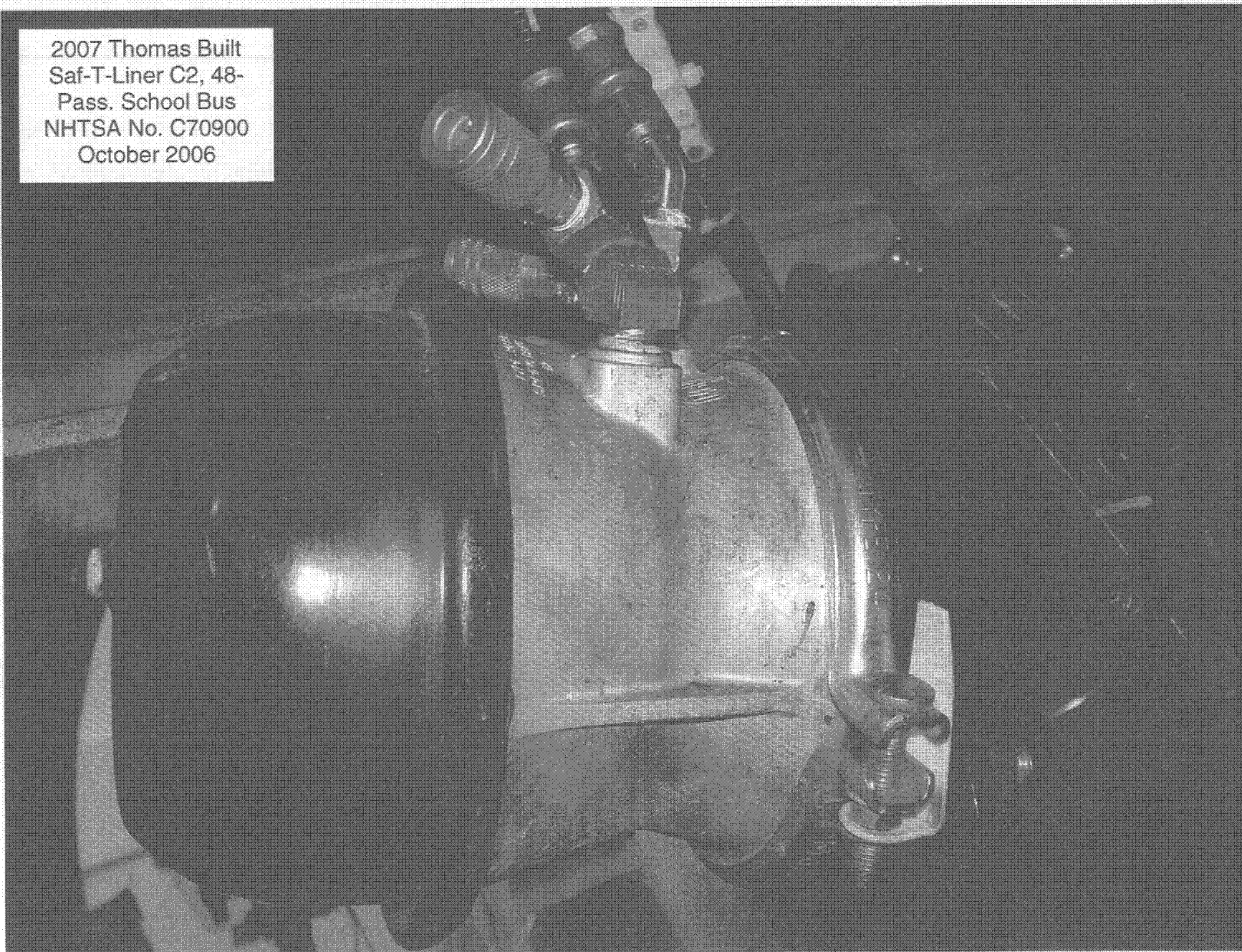
Left Steer ABS Modulator

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



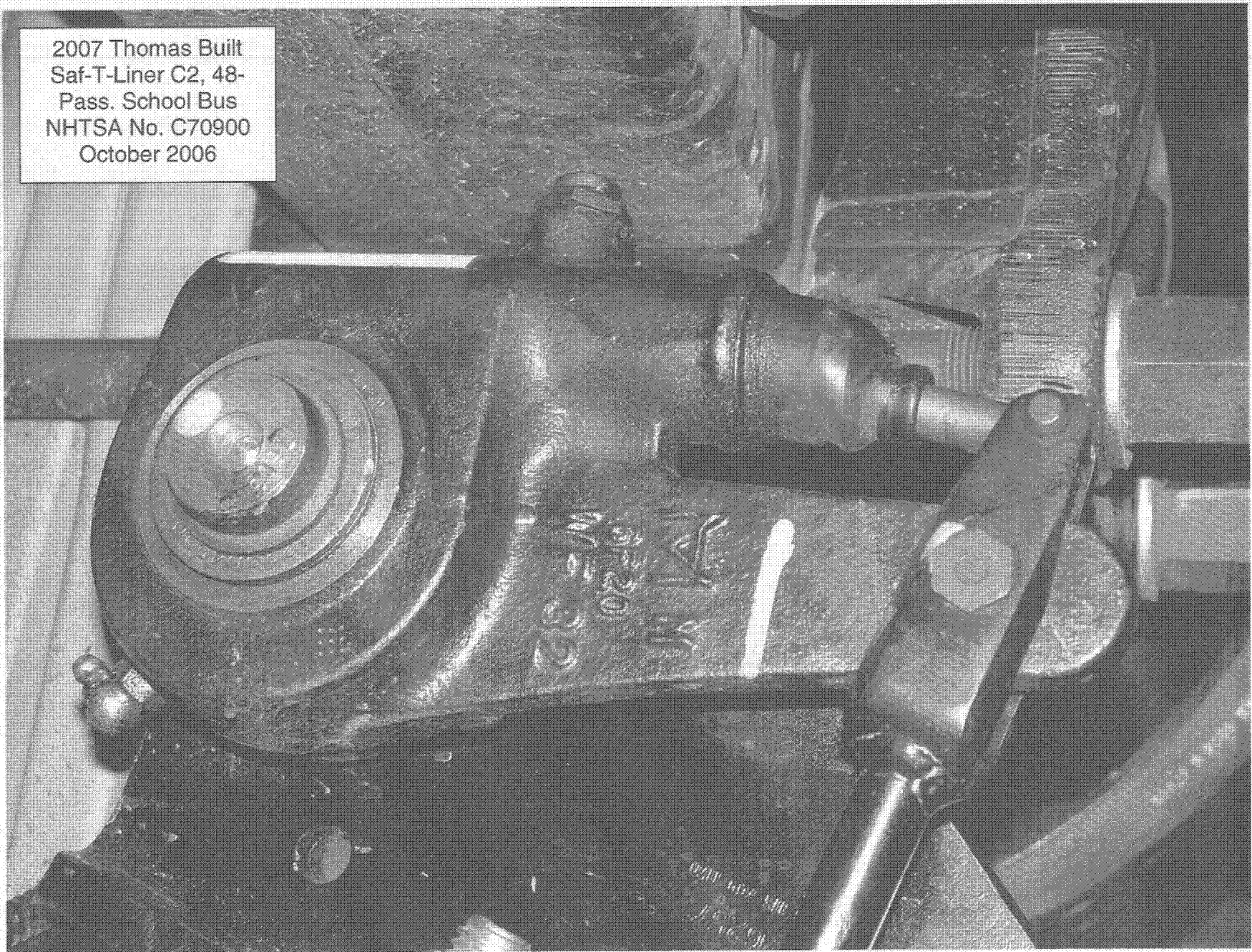
Right Rear Brake Assembly

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Right Rear Brake Chamber

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



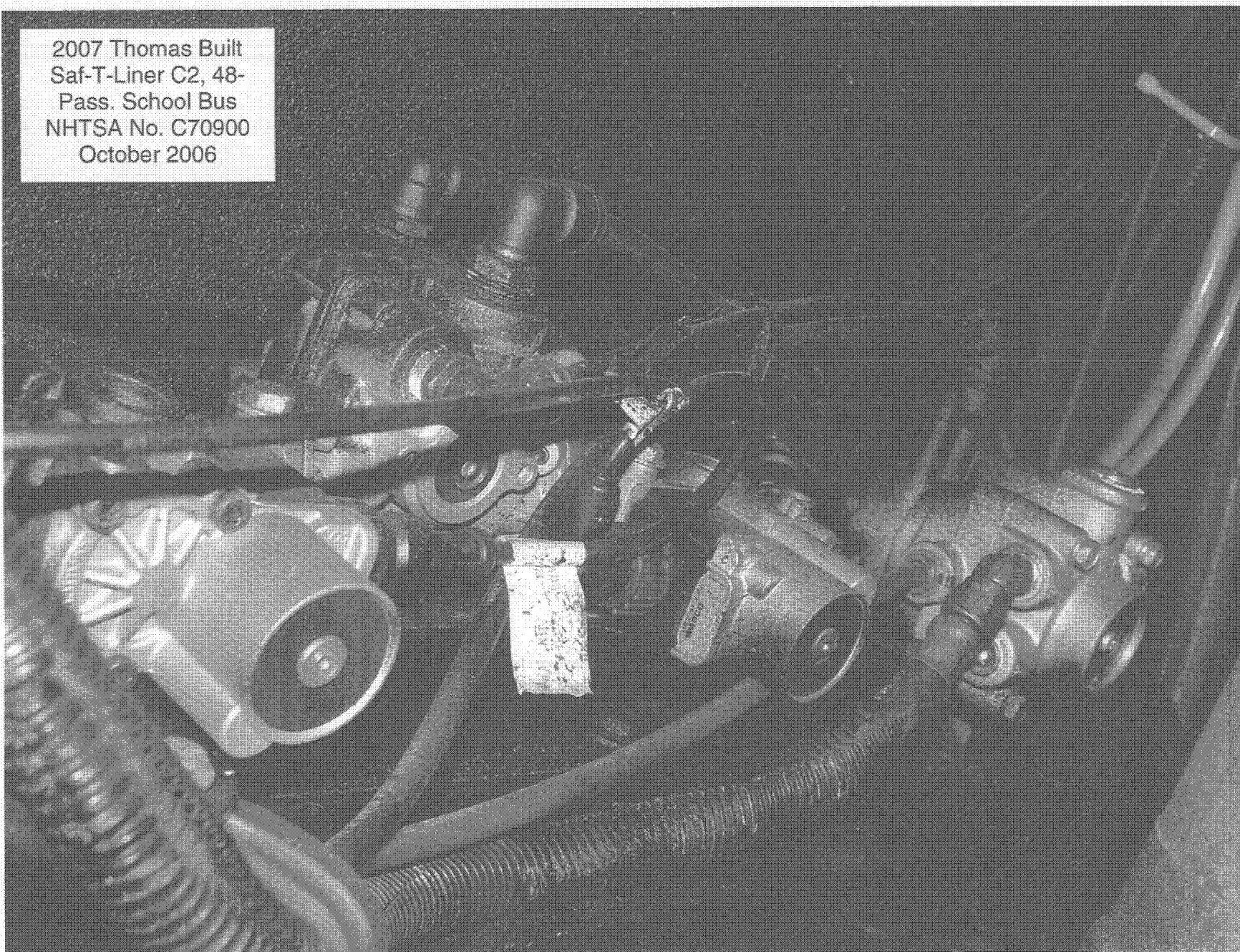
Right Rear Automatic Slack Adjuster

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



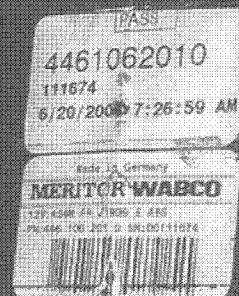
Right Rear Thermocouple Installation

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



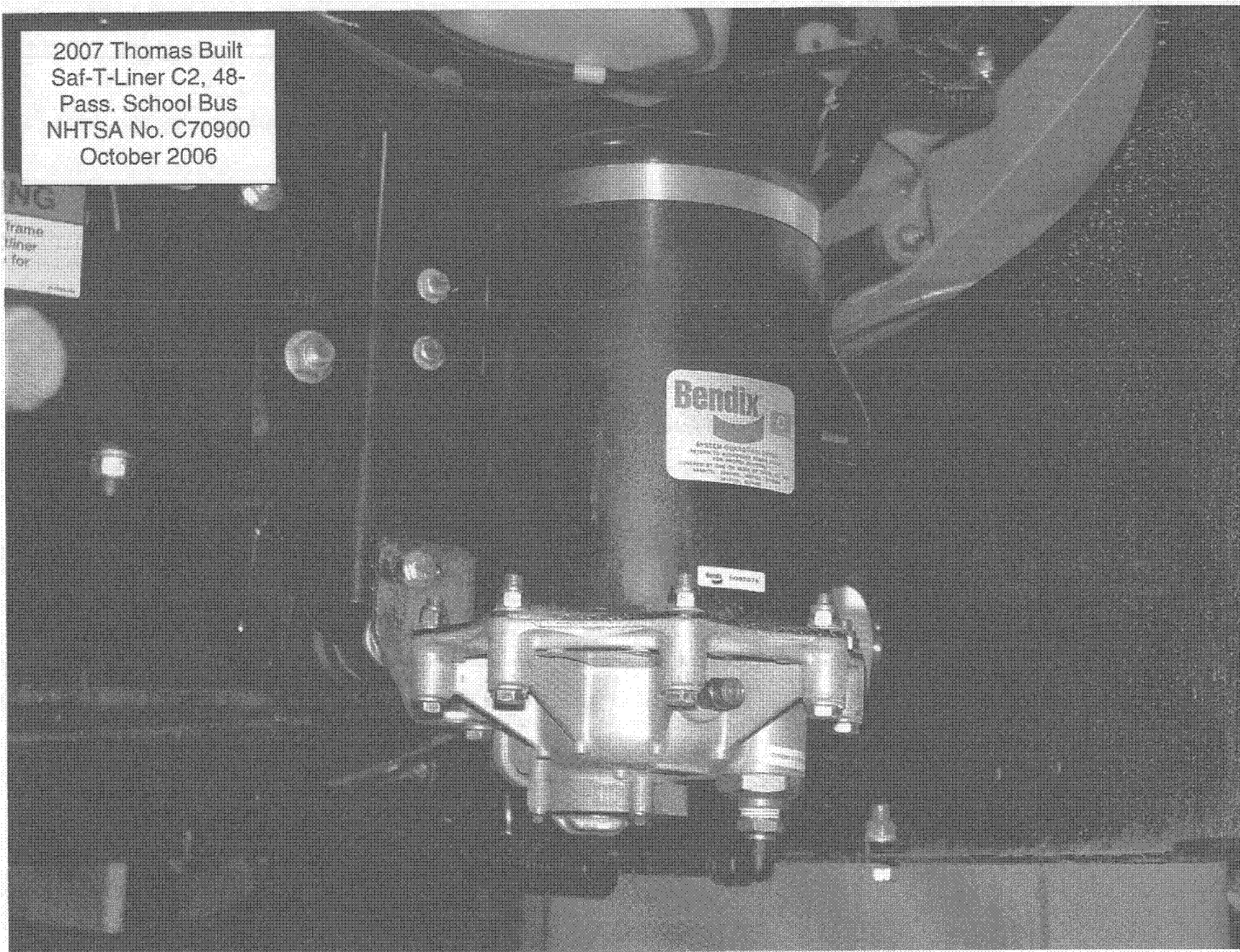
Rear ABS Modulators, Quick Release Valve and R12 Valve

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



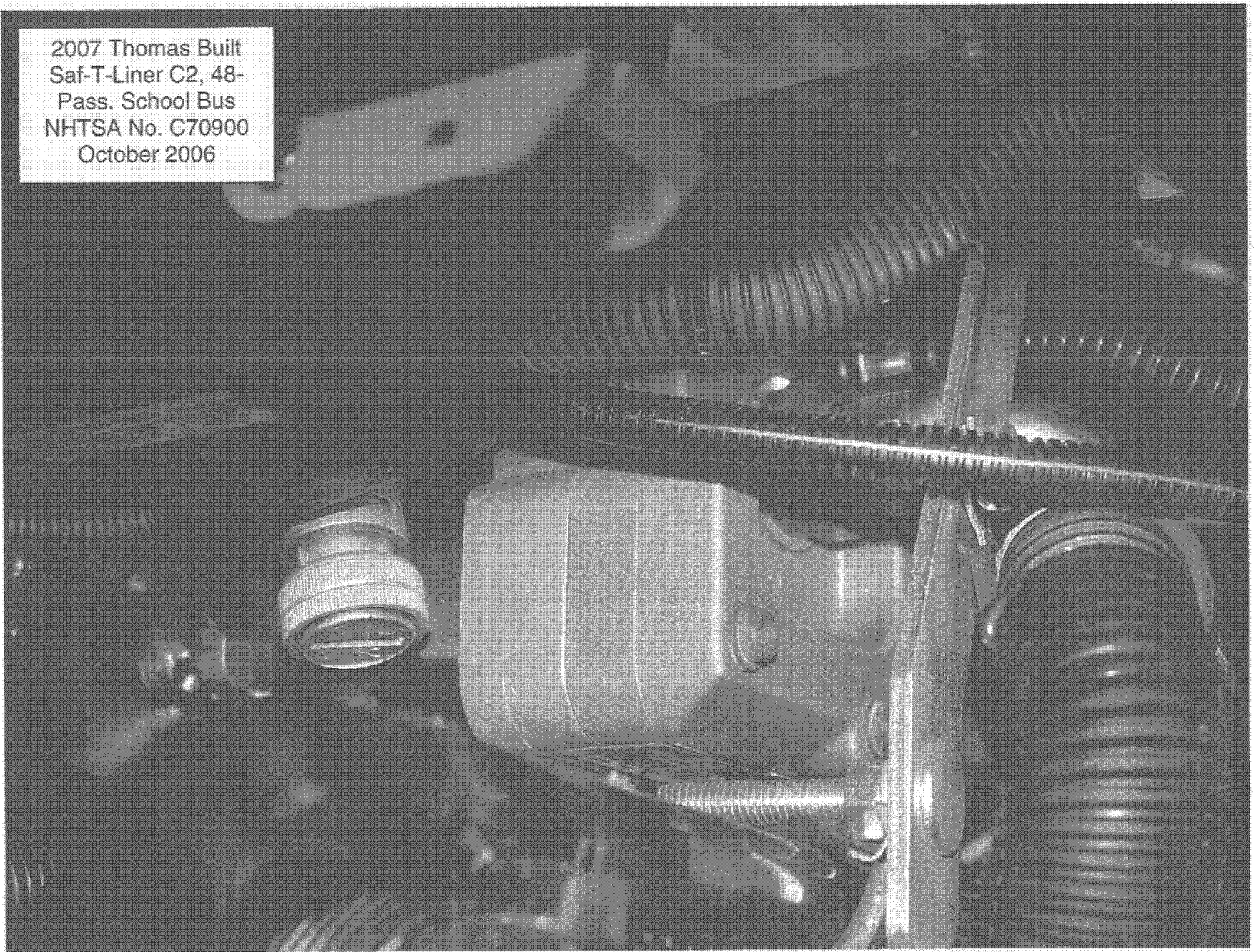
ABS ECU (Underneath vehicle)

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



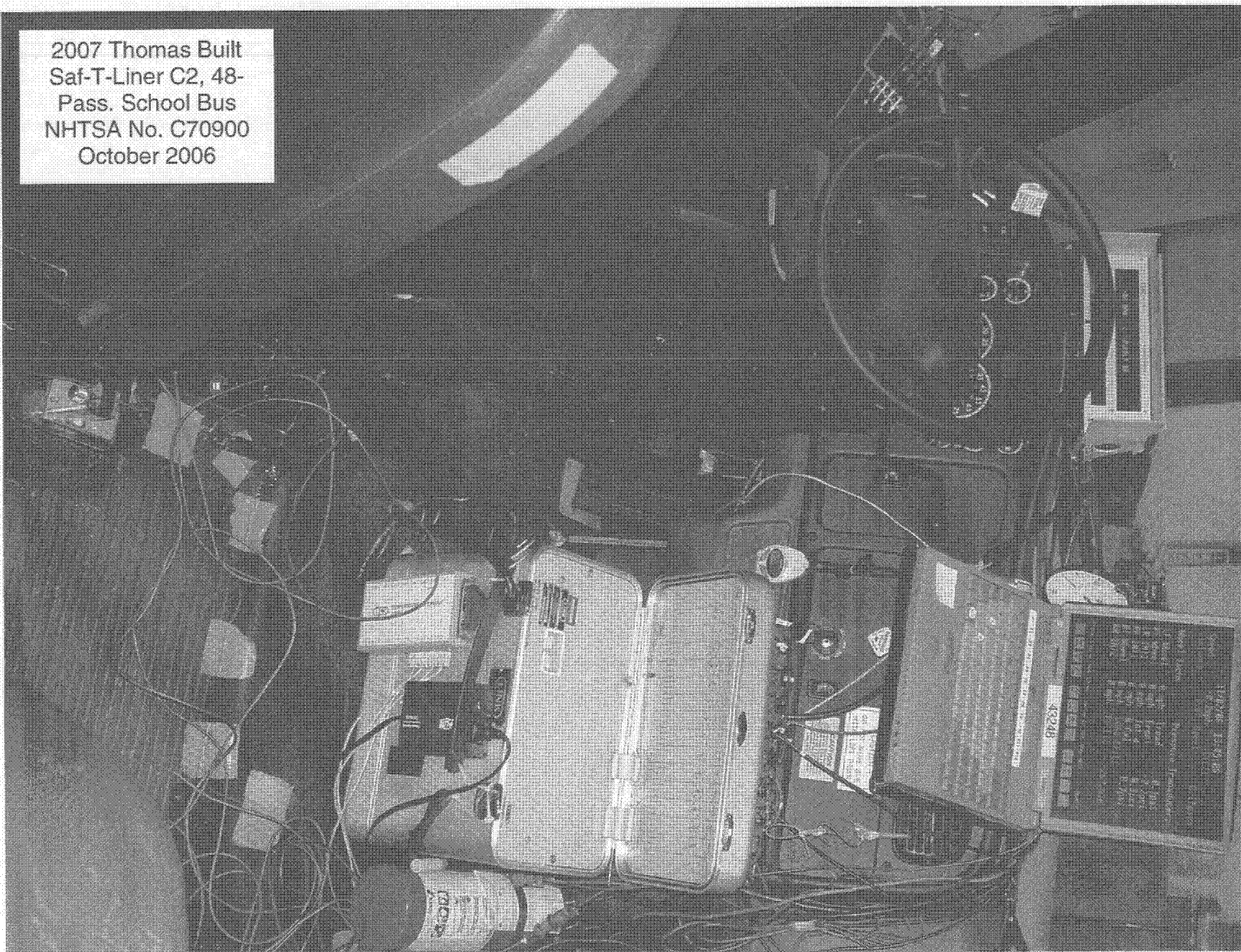
Pneumatic Brake Dryer

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Air Compressor

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Instrumentation Installation

2007 Thomas Built
Saf-T-Liner C2, 48-
Pass. School Bus
NHTSA No. C70900
October 2006



Ballast Installation

APPENDIX B

TEST DATA FROM REPORT GENERATOR

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/05/06

DATA SHEET 10 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0030, 10/05/06, 18:33:13

Weather Conditions: 52°F Wind: 6 mph 1°

Start Odo.: 608

End Odo.: 1118

Schedule:

Initial Brake Temperature Less Than 200°F

Initial Speed 40 mph to 20 mph

500 snubs with transmission in gear

Performance Requirements:

Interval between runs: Time necessary to reach speed of 40 mph and 1 mile, or 1.5 miles, whichever occurs first.

Constant decel rate: 10 ft/sec²

Pedal force adjusted to maintain constant decel.

No Lock-Up allowed longer than 0.1 sec above 10 mph

Vehicle Must stay in lane of 12 ft.

SNUB #	INIT	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	AVG. TREADLE PRESSURE	AVG. DECEL
	SPD (mph)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	(psi)	(ft/sec ²)
1	39.72	82	85	90	95	38.65	9.65
25	39.95	203	251	302	336	45.85	10.41
50	40.13	208	251	296	325	44.08	9.74
75	40.11	207	251	295	323	44.17	9.77
100	40.02	194	249	307	340	45.07	10.16
125	40.96	199	235	320	357	43.40	9.70
150	40.27	180	230	289	316	41.19	9.50
175	40.41	189	231	317	349	40.19	9.27
200	39.70	179	218	274	289	40.33	10.18
225	40.59	188	226	299	323	40.65	9.56
250	40.42	190	235	294	329	42.95	10.29
275	39.92	196	238	277	290	40.30	9.49
300	40.48	202	252	292	315	42.09	9.93
325	40.42	208	253	295	326	39.83	9.45
350	40.44	216	247	295	326	42.66	9.82
375	40.05	206	249	296	323	40.25	9.99
400	40.89	214	259	286	321	43.25	9.18
425	40.06	218	259	311	335	40.47	9.80
450	39.88	206	255	302	322	41.70	9.98
475	40.46	217	252	306	327	40.99	9.77
500	40.13	211	254	300	325	43.04	10.30

Comments: The Data Sheet 11(A) is located in the LLVW section. Test vehicle is a single unit truck.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKKY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/16/06

DATA SHEET 12 - SERVICE BRAKE STOPPING DISTANCE AT GVWR

Testing Conditions: INV DATA, Section 0045, 10/16/06, 14:28:25

Weather Conditions: 55°F Wind: 11 mph 138°

Start Odo: 1128

End Odo: 1152

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral.

Performance Requirements:

One Stop with:

Stopping Distance less than: 280.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	TREADLE	TREADLE	MAX.	AVG.
	(mph)	IBT	IBT	IBT	IBT	(feet)	(SAE 299)	PRESSURE	PRESSURE	DECEL	DECEL
		(°F)	(°F)	(°F)	(°F)		(feet)	(psi)	(psi)	(ft/sec ²)	(ft/sec ²)
1	60.34	130	145	161	161	234.2	231.6	120.64	106.54	27.64	15.39
2	60.12	139	161	182	186	243.4	242.5	121.06	108.89	27.40	16.03
3	60.30	141	143	192	197	225.9	223.7	121.74	103.40	28.99	15.28
4	59.97	119	122	187	197	222.1	222.3	121.91	103.84	29.99	15.01
5	59.17	117	114	184	196	235.7	242.3	115.60	96.90	27.36	14.74
6	19.94	99	97	160	169	26.6	26.8	122.14	108.92	32.07	9.63

STOP DRIVER VEHICLE STOP COMMENTS
(Wheel Lock up - Direction of Stop - Stay in Lane)

1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/24/06

DATA SHEET 13 - EMERGENCY BRAKE STOPPING DISTANCE AT GVWR
Primary Reservoir Failure

Testing Conditions: INV DATA, Section 0050, 10/24/06, 14:17:58

Weather Conditions: 45°F Wind: 24 mph 315°

Start Odo: 1161

End Odo: 1181

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral

Performance Requirements:

One Stop with:

Stopping Distance less than: 613.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
	SPD	IBT	IBT	IBT	IBT	DISTANCE	(SAE 299)	TREADLE PRESSURE	TREADLE PRESSURE	DECEL	DECEL
1	60.72	133	158	155	161	405.7	396.1	56.09	46.24	17.68	9.76
2	60.14	147	172	171	187	340.5	338.9	54.77	45.70	26.14	10.77
3	59.72	137	157	176	190	284.9	287.6	57.34	51.19	24.30	13.04
4	59.92	143	149	176	177	311.9	312.8	55.36	46.96	20.55	11.33
5	60.23	151	152	183	192	314.3	311.9	58.17	48.78	31.68	11.43
6	20.84	138	141	171	185	34.5	31.8	38.13	34.57	26.13	10.14

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/25/06

**DATA SHEET 14 - EMERGENCY BRAKE SECONDARY STOPPING DISTANCE AT GVWR
Secondary Reservoir Failure**

Testing Conditions: INV DATA, Section 0051, 10/25/06, 09:59:54

Weather Conditions: 42°F Wind: 9 mph 318°

Start Odo: 1194

End Odo: 1217

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral.

Performance Requirements:

One Stop with:

Stopping Distance less than: 613.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
1	60.38	95	112	149	142	313.0	309.1	112.30	100.79	28.38	10.80
2	60.99	98	115	186	186	321.8	311.4	121.66	84.77	21.26	8.84
3	57.35	90	95	196	186	249.3	272.9	114.51	88.39	23.24	11.56
4	58.84	83	86	197	186	266.4	277.0	115.73	102.26	24.19	11.55
5	60.03	82	82	200	189	297.2	296.9	113.58	91.37	22.93	10.80
6	20.69	76	80	197	187	33.8	31.6	122.36	99.80	25.74	7.95

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/25/06

DATA SHEET 15 - EMERGENCY BRAKE CONTROL LINE FAILURE DISTANCE @GVWR
Control Line Failure

Testing Conditions: INV DATA, Section 0052, 10/25/06, 13:04:46

Weather Conditions: 47°F Wind: 3 mph 282°

Start Odo: 1221

End Odo: 1242

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral

Performance Requirements:

One Stop with:

Stopping Distance less than: 613.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT	RIGHT	LEFT	RIGHT	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX.	AVG.	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
		FRONT IBT (°F)	FRONT IBT (°F)	REAR IBT (°F)	REAR IBT (°F)			TREADLE PRESSURE (psi)	TREADLE PRESSURE (psi)		
1	60.39	108	119	167	146	278.9	275.3	114.89	89.88	22.62	10.82
2	59.57	121	140	202	172	274.7	278.7	114.97	83.61	22.72	10.84
3	60.18	124	128	204	176	293.7	291.9	114.72	81.40	22.19	10.29
4	59.55	120	121	200	172	285.2	289.6	114.78	83.21	22.02	11.00
5	60.22	121	118	197	166	312.2	309.9	114.08	86.02	22.66	10.34
6	20.47	113	112	189	166	34.3	308.3	114.63	75.52	25.00	5.73

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT NHTSA NUMBER: C70900

Make: THOMAS BUILT

Model: SAF-T-LINER C2

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Transportation Research Center, Inc.

10820 State Route 347

East Liberty, Ohio 43319

Date Tested: 10/25/06

DATA SHEET 16 - PARKING BRAKE TEST (GRADE HOLDING) AT GVWR

Testing Conditions: INV DATA, Section 0065, 10/25/06, 14:37:18

Parking brake: N/A

Non-service type: N/A

Service type: HAND-OPERATED

Weather Conditions: 45°F Wind: 20 mph 304°

Start Odo.: 1244

End Odo.: 1244

Test Weight: Total: 25500lbs

Front: 8000lbs

Rear: 17510lbs

Schedule:

Initial Brake Temperature <200°F or (Ambient temp.

if non-service brake type materials)

Loaded to GVWR with transmission in neutral

Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:

Parking brake must hold the vehicle stationary

in both directions for 5 minutes each.

NOTE: For vehicles with parking brake systems not utilizing the service brake friction elements, the friction elements of such systems are to be burnished prior to parking brake tests according to the manufacturer's published recommendation as furnished to the purchaser. If no recommendations are furnished, test the system in an unburnished condition. If recommendations are furnished, record method used.

APPLY #	Min. SERVICE FORCE	LEFT REAR IBT	RIGHT REAR IBT	AVG REAR IBT	DRIVER VEHICLE STOP COMMENTS (Direction of Stop (Up/Down) - Brake holds/fails)		
	(psi)	(°F)	(°F)	(°F)			
1	37	178	172	175.0	UPHILL	HOLDS	20%
2	35	164	159	161.5	DOWNHILL	HOLDS	20%

Is brake system indicator lamp activated: YES (X) NO ()

Comments: Test vehicle "held" on parking brake slope. Therefore, Data Sheet 17, "Static Retardation Test", was not required.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/26/06

DATA SHEET 11A - STABILITY AND CONTROL AT LLVW

Testing Conditions: INV DATA, Section 0040, 10/26/06, 11:51:24

Weather Conditions: 42°F Wind: 10 mph 127°

Start Odo.: 1250

End Odo.: 1254

Schedule:

Initial Brake Temperature <200 F

Initial Speed <=40 mph LLVW

4 stops with transmission in neutral

Performance Requirements:

Three Stops with:

Highest possible constant speed at which vehicle
can be driven through 200 feet of arc of low

Mu 500 ft radius curve.

Vehicle Must stay in lane of 12 feet

STOP #	INIT SPD	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	ACTUAL DISTANCE	CORRECTED DISTANCE (SAB 299)	MAX. TREADLE PRESSURE	AVG. TREADLE PRESSURE	MAX. DECEL	AVG. DECEL
	(mph)	(°F)	(°F)	(°F)	(°F)	(feet)	(feet)	(psi)	(psi)	(ft/sec²)	(ft/sec²)
1	23.83	123	148	170	153	109.8	111.4	120.97	109.82	17.14	6.20
2	24.67	118	142	165	154	116.7	110.4	120.16	108.51	16.59	6.09
3	24.85	120	137	163	155	119.5	111.5	121.00	108.72	19.00	6.17
4	25.23	122	136	163	155	116.2	105.2	120.85	109.63	19.69	6.25

STOP DRIVER VEHICLE STOP COMMENTS
(Wheel Lock up - Direction of Stop - Stay in Lane)

1	-	NOX	EAST	YES
2	-	NOX	EAST	YES
3	-	NOX	EAST	YES
4	-	NOX	EAST	YES

Corrected Distances are used to determine shortest stopping distance.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT NHTSA NUMBER: C70900

Make: THOMAS BUILT

Model: SAP-T-LINER C2

Body Style: SCHOOL BUS 48-P

Transportation Research Center, Inc.

10820 State Route 347

East Liberty, Ohio 43319

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/30/06

DATA SHEET 18 - SERVICE BRAKE STOPPING DISTANCE AT LLVW

Testing Conditions: INV DATA, Section 0046, 10/30/06, 09:52:05

Weather Conditions: 49°F Wind: 7 mph 162°

Start Odo: 1267

End Odo: 1281

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral

Performance Requirements:

One Stop with:

Stopping Distance less than: 280.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	TREADLE	TREADLE		DECEL	DECEL
	(mph)	(°F)	(°F)	(°F)	(°F)	(feet)	(feet)	(psi)	(psi)		(ft/sec ²)	(ft/sec ²)
1	60.05	113	130	160	150	186.8	186.5	119.76	107.63	37.59	17.83	
2	60.47	119	131	171	165	193.7	190.7	120.59	105.70	34.84	17.64	
3	60.02	114	120	174	165	182.3	182.2	120.46	111.05	36.39	17.64	
4	60.21	131	144	197	187	194.9	193.6	119.26	105.19	31.24	17.08	
5	59.48	127	136	196	183	185.9	189.1	120.46	107.82	32.37	17.50	
6	20.36	131	146	197	189	25.7	24.8	120.13	109.25	32.88	11.81	

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JRFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/30/06

DATA SHEET 19 - EMERGENCY BRAKE STOPPING DISTANCE AT LLVW
Primary Reservoir Failure

Testing Conditions: INV DATA, Section 0053, 10/30/06, 10:36:04

Weather Conditions: 56°F Wind: 13 mph 13°

Start Odo: 1281

End Odo: 1299

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral.

Performance Requirements:

One Stop with:

Stopping Distance less than: 613.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT		CORRECTED	MAX.	AVG.		MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	ACTUAL	DISTANCE	TREADLE	TREADLE	MAX.	DECEL	DECEL
	(mph)	(°F)	(°F)	(°F)	(°F)	(feet)	(SAE 299)	PRESSURE	PRESSURE	(ft/sec ²)	(ft/sec ²)	(ft/sec ²)
1	58.47	113	125	179	169	196.7	207.1	59.76	52.55	31.63	15.78	
2	59.47	134	141	199	182	202.9	206.5	58.58	50.10	32.60	16.35	
3	57.97	124	130	202	180	199.4	213.6	58.19	49.77	27.27	15.36	
4	60.04	123	131	195	178	204.6	204.3	58.19	48.28	28.24	15.67	
5	59.20	125	134	198	179	198.9	204.3	53.94	43.95	26.62	16.44	
6	21.58	129	141	195	179	29.0	24.9	50.74	46.69	30.48	9.79	

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/30/06

**DATA SHEET 20 - EMERGENCY BRAKE SECONDARY STOPPING DISTANCE AT LLVW
Secondary Reservoir Failure**

Testing Conditions: INV DATA, Section 0054, 10/30/06, 11:23:37

Weather Conditions: 62°F Wind: 12 mph 155°

Start Odo: 1299

End Odo: 1315

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral.

Performance Requirements:

One Stop with:

Stopping Distance less than: 613.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
		(°F)	(°F)	(°F)	(°F)						
1	59.94	119	122	167	159	248.7	249.3	119.38	106.38	32.64	14.42
2	59.92	114	120	189	179	229.8	230.4	119.99	107.14	34.62	14.52
3	58.52	114	120	200	185	227.7	239.3	120.18	107.65	27.94	14.51
4	58.91	112	117	196	181	217.6	225.7	120.96	110.76	27.04	14.98
5	58.81	111	111	201	181	228.1	237.4	121.20	107.66	28.17	14.60
6	20.36	108	117	192	178	29.9	28.9	120.07	109.13	28.17	10.81

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/30/06

DATA SHEET 21 - EMERGENCY BRAKE CONTROL LINE FAILURE DISTANCE @LLVW
Control Line Failure

Testing Conditions: INV DATA, Section 0055, 10/30/06, 13:13:30

Weather Conditions: 68°F Wind: 18 mph 199°

Start Odo: 1317

End Odo: 1331

Schedule:

Initial Brake Temperature: <200°F

Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.

6 stops with transmission in neutral.

Performance Requirements:

One Stop with:

Stopping Distance less than: 613.0 feet

(See Table 1 of FMVSS121, "Stopping Distance Requirements")

Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel

Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
		IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)						
1	58.94	121	127	154	154	180.7	187.3	112.09	95.45	32.55	18.02
2	59.89	139	147	174	171	188.5	189.2	112.96	95.39	36.06	17.81
3	60.39	155	162	193	184	191.4	189.0	113.08	94.87	34.46	17.52
4	59.83	151	163	196	182	185.6	186.7	114.04	97.11	37.93	17.78
5	59.36	150	156	195	182	188.9	193.0	113.80	95.88	35.73	17.58
6	20.24	149	156	196	180	29.7	29.0	114.43	100.62	34.33	11.97

STOP DRIVER VEHICLE STOP COMMENTS
(Wheel Lock up - Direction of Stop - Stay in Lane)

1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

Vehicle: 2007 THOMAS BUILT

NHTSA NUMBER: C70900

Transportation Research Center, Inc.

Make: THOMAS BUILT

10820 State Route 347

Model: SAF-T-LINER C2

East Liberty, Ohio 43319

Body Style: SCHOOL BUS 48-P

Front Cold Tire Pressure: 100 (psi)

Rear Cold Tire Pressure: 100 (psi)

Date Tested: 10/30/06

DATA SHEET 22 - PARKING BRAKE TEST (GRADE HOLDING) AT LLVW

Testing Conditions: INV DATA, Section 0066, 10/30/06, 13:57:19

Parking brake: N/A

Non-service type: N/A

Service type: HAND-OPERATED

Weather Conditions: 68°F

Wind: 13 mph 181°

Start Odo.: 1332

End Odo.: 1332

Test Weight: Total:16810LBS

Front:5980LBS

Rear:10830LBS

Schedule:Initial Brake Temperature <200°F or (Ambient temp.
if non-service brake type materials)

Loaded to GVWR with transmission in neutral

Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:

Parking brake must hold the vehicle stationary

in both directions for 5 minutes each.

NOTE: For vehicles with parking brake systems not utilizing the service brake friction elements, the friction elements of such systems are to be burnished prior to parking brake tests according to the manufacturer's published recommendation as furnished to the purchaser. If no recommendations are furnished, test the system in an unburnished condition. If recommendations are furnished, record method used.

	MIN	LEFT	RIGHT	AVG	
	SERVICE	REAR	REAR	REAR	
APPLY	FORCE	IBT	IBT	IBT	DRIVER VEHICLE STOP COMMENTS
#	(psi)	(°F)	(°F)	(°F)	(Direction of Stop (Up/Down) - Brake holds/fails)
=====	=====	=====	=====	=====	=====
1	25	170	160	165.0	- UPHILL HOLDS 20%
2	25	153	140	146.5	- DOWNHILL HOLDS 20%

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HEBERLI

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/16/06

Approving Laboratory Official: JEFF SANKEY

Date: 11/17/06

APPENDIX C

CONTRACTOR'S TEST COMMENTS

Though the vehicle was new, it was delivered with an engine performance issue. The vehicle was towed to a local Freightliner/Mercedes-Benz dealership that found a fuel pressure deficiency. The dealership repaired this and the vehicle was driven back to TRC.

During the Timing and Release Tests, the steering axle was unable to achieve the required 95 psi prior to release. TRC Inc. technicians found a leak at the RF output side of the quick release valve. TRC Inc. technicians repaired this and the Timing and Release Tests completed.

Per OVSC and as an indicant test, a 20 mph stop was performed at the end of each stop sequence.